

DOCUMENT RESUME

ED 282 011

CE 047 103

AUTHOR Seperich, George; And Others
TITLE Agriculture Business and Management.
INSTITUTION Northern Arizona Univ., Flagstaff. Center for Vocational Education.
SPONS AGENCY Arizona Occupational Research Coordinating Unit, Phoenix.
PUB DATE Aug 86
NOTE 337p.
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC14 Plus Postage.
DESCRIPTORS *Agribusiness; *Agricultural Education; Agricultural Engineering; Agricultural Machinery; *Agricultural Production; Animal Husbandry; Behavioral Objectives; Curriculum Guides; *Farm Management; Harvesting; Job Analysis; *Job Skills; Learning Activities; Livestock; Pests; Plant Growth; Plant Pathology; Postsecondary Education; Secondary Education; *Vocational Education

ABSTRACT

This curriculum guide is intended for vocational agriculture teachers who deliver agricultural business and management programs at the secondary or postsecondary level. It is based on the Arizona validated occupational competencies and tasks for management and supervisory positions in agricultural business. The competency/skill and task list appears first. Each page of the instructor's guide which follows provides information related to a specified task within the competency. The information includes competency/skill; task; performance objective; student learning experiences; suggested instructional techniques; instructional equipment, materials, and supplies; and resources. The 19 competencies/skills relate to management and recordkeeping; marketing and purchasing; breeding and care of newborn animals; livestock health (disease and parasite control); livestock feed; facilities and equipment construction and maintenance; personal and human relations skills; safety practices; livestock showing; seed selection; planting; tillage equipment selection, maintenance, and operation; irrigation system design, construction, and operation; insect control program management; plant disease control program management; weed control program management; fertilizers; harvesting; and engine, implement, and equipment operation and maintenance. An annotated bibliography is appended. (YLB)

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AGRICULTURE BUSINESS AND MANAGEMENT

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State Director for Vocational Education

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AUGUST 1986

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FUNDING INFORMATION

Project Title: Curriculum

Educational Act
Under Which the
Funds Were
Administered: Carl D. Perkins Vocational Education Act of 1984,
P.L. 98-524

Source of Grant: Arizona Department of Education
Phoenix, Arizona

Grantee: Arizona Center for Vocational Education
Center for Excellence in Education
Northern Arizona University
Flagstaff, Arizona 86011

Disclaimer: This publication was prepared pursuant to guidelines of
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Printed by the
Arizona Center for Vocational Education
Flagstaff, Arizona

Total Copies Printed: 100 Unit Printing Cost: \$9.98
Total Printing Cost: \$997.50 Date of Printing: September, 1986
On behalf of the Arizona Department of Education

AGRICULTURE BUSINESS AND MANAGEMENT

Written By:
Dr. George Seperich
David Iwinski
Diane Sarikas
Steve Atchison
Tom Rogers

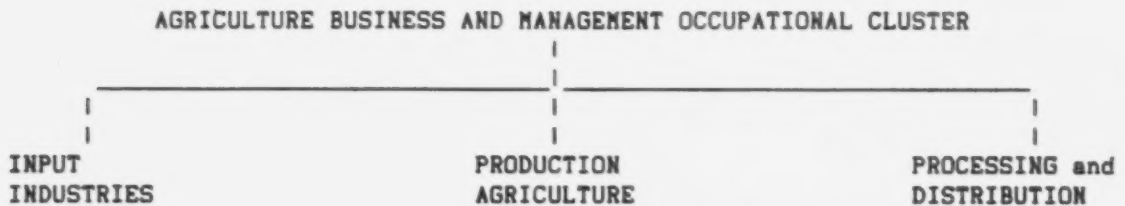
Project Director
Nancy F. Dillon

ARIZONA CENTER FOR VOCATIONAL EDUCATION
CENTER FOR EXCELLENCE IN EDUCATION
NORTHERN ARIZONA UNIVERSITY
SEPTEMBER, 1986

FOREWORD/INTRODUCTION

The Agriculture Business and Management Competency Based Curriculum Guide has been developed for Vocational Agriculture Teachers who are delivering Programs of Agriculture Business and Management at the secondary or postsecondary level.

The guide is based on the Arizona validated occupational competencies and tasks for management and supervisory positions in agricultural businesses. Agricultural businesses within the Agriculture Business and Management Program cluster include production operations, input businesses to the production sector such as seed, feed, and chemical operations and finally businesses involved in the processing and distribution of agricultural products.



An analysis of the competency needs of people employed in Agriculture Business and Management indicated that competencies relating to Management, Marketing, Finance, Plant and/or Animal Science, Mechanics, and Leadership/Human Relations skills needed to be included in the curriculum. Those teachers instituting programs of Agriculture Business and Management should provide for each of these competency categories in their curriculum.

Validated competencies have been utilized in curriculum design by both the Arizona Department of Education and the Community Colleges in Arizona. A major effort was made by both to insure that vocational education programs at both the secondary and postsecondary levels in similar areas utilized a single competency list. This curriculum now incorporates the newly-developed articulated list of validated competencies for Agriculture Business and Management.

This was accomplished by a group of educators including: Members of the State Board of Education and Committee to the Board on Vocational Education, State Community College Board staff, Community College administrators and instructors, Arizona Department of Education staff, Northern Arizona University Curriculum Project director, and high school teachers from around the state.

Each page of this guide includes information related to a specified task within the competency. For this reason, the teacher can duplicate the pages directly from the curriculum guide which shows students the COMPETENCY/SKILL, TASK, PERFORMANCE OBJECTIVE, and STUDENT LEARNING EXPERIENCES. You are encouraged to supplement this guide with materials you have developed and other curriculum guides.

A sincere effort has been made to maintain the integrity of the industry-validated competencies, while preparing these materials for you. For that reason the instructor can be assured that the use of this guide as a basis for instruction in Agriculture Business and Management is consistent with the skills students need for employment in this dynamic and growing field of Agriculture.

For generations agriculture in the United States has successfully developed in the areas of technology and production. In fact, this union of agricultural technology and production consistently led to increased productivity and higher commodity yields, despite continual decline in the number of people involved in production agriculture. However, this success in the productivity sector masked the need to develop America's potential as a marketer. Emboldened by our productivity prowess, we placed all other aspects of the agricultural enterprise in a subservient state. If we produced it, we would somehow market it. This was not true. We had to change; production alone was not enough. No enterprise, or business, could long survive with a unidimensional capability.

Business? Yes, this is the next phase of American Agriculture's development. Economics and history are dynamic processes, but because they encompass large time segments we tend to view the process as frozen, or static. Much like the "freeze frame" approach is slowing down the action in a movie. Whether we perceive it or not, this dynamism fosters change. We have come to accept the development of the industrial age from the agrarian society. The impetus for this change was provided by economics, but we have come to view the process as historical. The perception is irrelevant; the fact is the change occurred. This accepted change appeared to relegate agriculture's contribution in world development to a large, early donation, with industrial development establishing its subsequent primacy and dominance. Furthermore, we even seem to accept change as the industrial revolution is fostering the development of its next phase, the service and information economy, but we continue to discount the participation by agriculture in this change. Agriculture serves only to provide the raw commodities and nothing more. This notion is patently false, and highly inaccurate. Agriculture is changing and developing also. The direction of this change is easy to see. The next step in agricultural development is agribusiness.

The development of agriculture toward an agribusiness emphasis will place greater demands on the participants, the future agriculturalists or agribusiness people. These people will have to continue their mastery of agricultural technologies, and production enhancements, but they will also have to know and grasp the fundamentals of business. And it is fundamentals which must be applied; they encompass management, marketing and finance, to name a few. Balance sheets will take their place alongside irrigation schedules. Just as important, this emphasis on agribusiness will not carry a size limitation. Agribusiness is for all to apply, it carries no connotation of size, nor disenfranchises anyone. Just like the smaller, never businesses provide the economic and entrepreneurial impetus in industry, agribusiness participation is not limited to the large and the corporately designated. The latter, in truth, are prepared to participate today, but no one is excluded from participating in the future.

If today's student is to become a part of a very promising future he/she must begin to prepare today. We, the teachers, have the responsibility of preparing them for tomorrow. We have provided the basic skills in agricultural technologies, now we must be prepared to provide the agribusiness fundamentals. We must grow in knowledge, if they are to grow. As a noted football coach, George Allen, once said, "Tomorrow is today."

ACKNOWLEDGEMENTS

The Agriculture Business and Management Competency Based Curriculum Guide is the result of many people working together to insure quality curriculum for students seeking education and training in the agricultural occupations represented by the Agriculture Business and Management Program cluster.

The initial review of existing curriculum materials for their compatibility with the state curriculum model and the state validated competency list for Agriculture Power and Machinery was accomplished by Don Lindsey, a Vocational Agriculture teacher at Buckeye Union High School and Linda Proctor a Vocational Agriculture teacher at Dobson High School

A committee of educators and business people was assigned the responsibility of determining if the existing curriculum materials reviewed by Don Lindsey and Linda Proctor could be adapted or adopted to meet our needs in Arizona. The committee determined that adaption or adoption were not possible in this curriculum area and we would need to essentially develop our own curriculum guide consistent with the state validated competency list and the state curriculum model. The committee consisted of:

Bob Moore
Arizona Agri-Business Council

Frank Downs
Duncan High School

Dr. George Seperich
Agriculture Division
Arizona State University

Marven Busby
St. David High School

Jim Klinker
Arizona Farm Bureau Federation

The initial writing of the curriculum guide was done by:

Dr. George Seperich
Agriculture Division
Arizona State University

Diane Sarikas
Arizona State University

David Ivinski
Arizona State University

Steve Atchison
Arizona State University

Editing of the curriculum guide was done by:

Tom Rogers
Mesa Community College

David Ivinski
Arizona State University

This curriculum guide incorporates the newly-developed articulated list of validated competencies for Agriculture Business and Management. The committee responsible for the articulated list included:

Tom Rogers
Mesa Community College

Frank Downs
Duncan High School

Don Lindsey
Buckeye Union High School

Richard Newman
Arizona Western College

Paul Wellman
Tolleson Union High School

Dale Crabtree
Antelope Union High School

Pat Harrington
Central Arizona College

Dr. Philip Stiles
Arizona State University

Clair Decker
Mesa Community College

Direction and leadership was provided by Richard Condit, State Supervisor of Agricultural Occupations, Doug Daley, Assistant State Supervisor of Agricultural Occupations, and Dave Muehlbauer, Curriculum Coordinator for the Arizona Department of Education. This has resulted in a guide which reflects the most current practices and procedures in this area.

We are grateful to the entire staff of the Arizona Center for Vocational Education for their support, concern and assistance. Special thanks to the Curriculum Unit: Dr. Jerry R. Cox, Nancy F. Dillon, Kathi Jeffers, Cass Sandbakken, and the two computer input operators, Barbara Oftedahl and Sue Peters. In addition, we are grateful to Kathy Dunn for her leadership and assistance in getting the final curriculum guide completed, and Carole Ferlazzo for reviewing the curriculum for equity.

Dr. Robert V. Kerwood
Director
Arizona Center for
Vocational Education

Don Parsons
Manager
Arizona Center for
Vocational Education

John Lange
Deputy Superintendent
State Director of Vocational
Education
Arizona Department of Education

Barbara Border
Deputy Associate Superintendent
Arizona Department of Education

TABLE OF CONTENTS

	<u>Page</u>
FUNDING	11
FOREWORD	v
ACKNOWLEDGEMENTS	vi11
COMPETENCY/SKILL AND TASK LISTS	xi1
INSTRUCTOR'S GUIDE	1
ANNOTATED BIBLIOGRAPHY	311

COMPETENCY/SKILL AND TASK LIST

- 1.0 Performs management and recordkeeping functions for efficient operation of the agricultural business.
 - 1.1 Develops accurate record systems for the business including records on production performance, income and expense, labor costs, marketing, equipment maintenance and use, and depreciation.
 - 1.2 Summarizes and analyzes records to improve efficiency.
 - 1.3 Manages employees, including hiring, firing, developing work schedules and training.
 - 1.4 Develops and interprets an income statement.
 - 1.5 Develops and understands a break-even analysis for an agribusiness.
 - 1.6 Interprets a balance sheet.
 - 1.7 Develops and analyzes a cash flow statement for an agribusiness.
 - 1.8 Identifies the sources and uses of credit in an agribusiness.
 - 1.9 Applies risk management strategies.
 - 1.10 Completes individual and business tax forms.
 - 1.11 Evaluates investment alternatives.
 - 1.12 Calculates net worth, net income.
 - 1.13 Understands loan requirements (repayment terms, legal terms, interest charges, security requirements, etc.).
 - 1.14 Understands sources of credit.
 - 1.15 Contracts for services.
 - 1.16 Budgets available resources.
 - 1.17 Determines the production performance of each enterprise in relation to acceptable standards.
 - 1.18 Takes an accurate inventory.
 - 1.19 Develops a business plan.
 - 1.20 Plans a public relations program for the business.
 - 1.21 Operates computers and calculators.
 - 1.22 Completes resume and job applications.
- 2.0 Applies approved practices in marketing and purchasing to maximize return to the business.
 - 2.1 Purchases supplies, land and livestock for the business.
 - 2.2 Analyzes trends in supply and demand of a commodity.
 - 2.3 Identifies the most economical sources of supply.
 - 2.4 Identifies and utilizes sources of market information including international markets.
 - 2.5 Selects the market which will provide maximum return.
 - 2.6 Interprets market reports, market receipts and production statistics.
 - 2.7 Identifies and uses market trends and cycles in marketing.
 - 2.8 Determines market costs.
 - 2.9 Determines feasibility of participating in futures market contracts.
 - 2.10 Conducts a sale.
 - 2.11 Evaluates government programs affecting agricultural businesses.
 - 2.12 Negotiates and interprets buyer-seller contacts.

- 2.13 Prepares advertisements.
 - 2.14 Identifies damage to agricultural products which occurs from improper storage and transportation methods.
 - 2.15 Selects transportation.
- 3.0 Applies approved practices in breeding and care of newborn animals.
- 3.1 Identifies signs of approaching birth and assists in delivering young.
 - 3.2 Recognizes problems during birth.
 - 3.3 Assists newborn to nurse.
 - 3.4 Cares for orphans.
 - 3.5 Determines due dates of pregnant animals.
 - 3.6 Determines appropriate ratio of male to female animals to ensure a high pregnancy rate.
 - 3.7 Detects heat.
 - 3.8 Completes the registration procedures for registering purebred animals.
 - 3.9 Artificially inseminates livestock.
 - 3.10 Pregnancy-tests livestock.
 - 3.11 Weans animals.
 - 3.12 Determines when to cull animals.
 - 3.13 Uses performance and pedigree information in selecting herd replacements.
 - 3.14 Determines best buy per ampule of semen.
 - 3.15 Determines the most effective herd replacement rate to optimize genetic improvement and understand factors influencing it.
 - 3.16 Prepares livestock and facilities for parturition.
 - 3.17 Flushes animals before breeding to improve conception rate.
 - 3.18 Knows the process of fetal development.
 - 3.19 Identifies the anatomy of the male and female reproductive tract and know the function of the tract.
 - 3.20 Decides whether to use artificial insemination or direct service.
 - 3.21 Determines age and weight at which animals can breed or be bred.
 - 3.22 Determines causes of infertility.
 - 3.23 Knows the reproduction cycles and pregnancy periods of various types of livestock.
- 4.0 Applies approved practices in livestock health to control diseases and parasites.
- 4.1 Administers medication orally, by injection, and through feed and water.
 - 4.2 Applies medication to cuts and bruises.
 - 4.3 Cleans and disinfects pens and housing.
 - 4.4 Dips, drenches and dusts livestock.
 - 4.5 Pens sick, weak, or injured animals separately.
 - 4.6 Plans a parasite control program.
 - 4.7 Docks, castrates, brands, dehorns and trims feet.
 - 4.8 Marks, notches, tags, or tattoos ears.
 - 4.9 Identifies symptoms of common diseases and parasites.
 - 4.10 Interprets labels and medications.
 - 4.11 Prevents common diseases and parasites.
 - 4.12 Worms and pills.
 - 4.13 Stores pesticides, vaccines, and medications.

- 4.14 Develops a vaccination program.
 - 4.15 Determines amounts of medication or materials needed in specific situations.
 - 4.16 Identifies and corrects sanitation problems.
 - 4.17 Takes temperature.
 - 4.18 Calculates the cost of various health programs.
 - 4.19 Isolates newly purchased animals.
 - 4.20 Removes or buries dead animals.
 - 4.21 Determines when to call a veterinarian.
- 5.0 Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.
- 5.1 Determines proper amounts to feed various types of livestock.
 - 5.2 Determines water requirement for livestock.
 - 5.3 Identifies spoiled feed.
 - 5.4 Determines when and what supplemental feed must be fed.
 - 5.5 Distributes salt and mineral blocks.
 - 5.6 Feeds grazing livestock.
 - 5.7 Identifies feeds.
 - 5.8 Interprets feed tags, labels, and feed analysis reports.
 - 5.9 Determines relative nutrient value of feedstuffs.
 - 5.10 Determines equipment needed to feed livestock.
 - 5.11 Cleans and fills waterers.
 - 5.12 Calculates feed efficiency.
 - 5.13 Develops and balances rations and calculates cost.
 - 5.14 Determines the nutrient requirements of different ages, sex, kind, and weight of livestock.
 - 5.15 Determines proper feeding and watering space requirements.
 - 5.16 Determines when to change composition of rations based on poor performance or cost.
 - 5.17 Determines the correct feed preparation and feed form for best performance at minimum cost.
 - 5.18 Interprets feed standard tables.
 - 5.19 Identifies and makes use of the factors affecting the value and palatability of feeds.
 - 5.20 Knows the upper and lower limits of certain feeds to include in a ration.
 - 5.21 Formulates a balanced ration by the Pearson square or other methods.
 - 5.22 Calculates nutrient cost per unit.
 - 5.23 Interprets results of feeding experiments.
 - 5.24 Observes and handles feed and equipment safely.
 - 5.25 Understands state and federal feed laws.
 - 5.26 Formulates a least cost or least time ration.
 - 5.27 Determines substitution rates and substitute feedstuffs in rations.
 - 5.28 Determines different handling properties of grains and other feeds.
 - 5.29 Identifies storage factors to maintain quality of feeds and prevent contamination of harmful substances.
 - 5.30 Selects, operates, cleans and services grinding and mixing equipment.
 - 5.31 Estimates amounts of materials by volume.

- 5.32 Completes forms necessary in mixing and handling formulated feeds.
- 5.33 Recognizes problems associated with over or under feeding.
- 5.34 Plants growth stimulants.
- 6.0 Constructs and maintains facilities and equipment.
 - 6.1 Constructs fences.
 - 6.2 Joins steel tubing and pipe, copper tubing and pipe, and plastic tubing and pipe, using approved practices.
 - 6.3 Mixes, finishes, and places concrete.
 - 6.4 Uses woodworking and metalworking skills in construction and repair of buildings and equipment.
 - 6.4.1 Uses woodworking and metalworking skills in construction and repair of buildings and equipment.
 - 6.5 Wires 115 and 220 volt circuits.
 - 6.6 Installs and services electrical motors.
 - 6.7 Develops working drawings.
 - 6.8 Sets up, balances, and adjusts livestock scales.
 - 6.9 Safely adjusts and operates gas and arc welding equipment.
 - 6.10 Operates equipment safely.
- 7.0 Practices personal and human relations skills.
 - 7.1 Makes decisions when necessary.
 - 7.2 Listens well.
 - 7.3 Gets along with people.
 - 7.4 Communicates effectively.
 - 7.5 Follows and provides instructions.
 - 7.6 Works irregular hours occasionally.
 - 7.7 Develops self-confidence.
 - 7.8 Cooperates with fellow workers.
 - 7.9 Delegates responsibility when necessary.
 - 7.10 Promotes (sells) yourself and your firm.
 - 7.11 Identifies factors which make for job success and satisfaction.
 - 7.12 Gives needed advice diplomatically.
 - 7.13 Meets people easily.
 - 7.14 Works under stress.
 - 7.15 Evaluates performance continually.
 - 7.16 Dresses appropriately for the job.
 - 7.17 Remembers names and faces.
 - 7.18 Judges management and production potential of people.
- 8.0 Applies approved safety practices to reduce injury to crops, livestock and personnel.
 - 8.1 Sorts and loads livestock safely.
 - 8.2 Maintains equipment to prevent injury.
 - 8.3 Keeps protective shields on equipment in place.
 - 8.4 Grounds all electrical equipment.
 - 8.5 Reads and uses operator's manuals.
 - 8.6 Stores all chemicals and flammable objects safely.
 - 8.7 Safely disposes of unused chemicals.
 - 8.8 Stores medications safely.
 - 8.9 Makes safety inspections.
 - 8.10 Instructs employees on safe use of tools and equipment.

- 9.0 Selects and fits livestock for show to improve marketability of the herd.
 - 9.1 Selects animals for showing.
 - 9.2 Selects equipment for showing livestock.
 - 9.3 Prepares truck and/or trailer for hauling.
 - 9.4 Shows animals.
 - 9.5 Trains animals to lead, stand properly, and to be handled by judge.
 - 9.6 Washes and sets hair.
 - 9.7 Clips, blocks, and grooms animal according to current style.
 - 9.8 Keeps bedding clean and fresh.
- 10.0 Selects seed to maximize yield.
 - 10.1 Evaluates characteristics of varieties.
 - 10.2 Selects and secures seed.
 - 10.3 Recognizes factors and selects variety or strain best suited to local conditions and resources (soil, growing season, yield, resistance, irrigation, harvesting, equipment, etc.).
 - 10.4 Reads and evaluates a seed tag.
 - 10.5 Recognizes the requirements for seed certification.
 - 10.6 Adjusts the recommended seeding rate to allow for differences in purity, germination, seed size, and row width.
- 11.0 Practices approved seedbed preparation and planting techniques to maximize yields.
 - 11.1 Adjusts and calibrates planters to get desired number of plants.
 - 11.2 Identifies the characteristics of a good seedbed and prepares a seedbed for planting.
 - 11.3 Compares seeding methods.
 - 11.4 Recommends the proper seeding rate and adjusts the rate for seed quality.
 - 11.5 Determines soil moisture conditions necessary for planting.
 - 11.6 Considers local and seasonal weather variations and soil type when determining planting time for optimal growing conditions.
 - 11.7 Performs field adjustments and minor field repairs on planting equipment and power sources.
 - 11.8 Operates planting equipment and power sources.
 - 11.9 Evaluate the most recent findings pertaining to time of planting, depth of planting, width of rows, spacing within the rows, and method of planting.
- 12.0 Selects, maintains, and operates tillage equipment to ensure proper seedbed preparation.
 - 12.1 Determines the time to plow land.
 - 12.2 Operates plow and tillage equipment and power sources safely.
 - 12.3 Performs field adjustments and minor field repairs on equipment and power sources in the tillage operation.
 - 12.4 Selects proper equipment for tillage operation.

- 13.0 Designs, constructs, and operates irrigation systems consistent with water requirements of crops.
 - 13.1 Applies adequate soil water by irrigation when needed.
 - 13.2 Determines the minimum requirements that pertain to the design, installation, and performance of sprinkler and furrow irrigation equipment.
 - 13.3 Knows the water requirements of crops and be able to use water measurements and conservation factors.
 - 13.4 Is familiar with state and local stream rights and groundwater policies.
 - 13.5 Considers water quality, interprets water analysis reports, use of water classification tables, and availability of water supply.
 - 13.6 Plans and sets up an irrigation program to maximize returns.
 - 13.7 Makes moisture test of soil to determine need of irrigation.
 - 13.8 Operates irrigation equipment safely.
 - 13.9 Performs field adjustments and minor field repairs on irrigation equipment and power sources.
 - 13.10 Identifies soil and plant conditions indicating irrigation needs.
 - 13.11 Measures and controls water distribution.
 - 13.12 Evaluates the effects of moisture on quantity and quality of crop.
 - 13.13 Determines the type and slope of soil.
 - 13.14 Determines available water supply.
 - 13.15 Determines cost of installation and cost of operating an irrigation system.
- 14.0 Manages an insect control program to reduce losses and maximize yields.
 - 14.1 Identifies insect pests that are major nuisances to crops and livestock in your locality and the characteristics of insect damage.
 - 14.2 Identifies nematode damage and plans effective control.
 - 14.3 Calibrates pesticide applicators.
 - 14.4 Plans effective insect control program and compares the advantages and disadvantages of chemical control versus cultural control.
 - 14.5 Distinguishes between nutritional deficiencies, fertilizer damage, chemical damage, insect damage, insect-borne diseases, fungi-borne diseases, and viruses.
 - 14.6 Summarizes the precautions which should be followed when using pesticides.
 - 14.7 Use attractants and/or traps to anticipate a rise in insect population.
 - 14.8 Selects and wears protective clothing while working with fungicides and insecticides.
 - 14.9 Mixes insecticides and fungicides for control of insects.
 - 14.10 Reads and interprets the contents, directions for use, and cautions on the label of insecticides and fungicides.
 - 14.11 Meets state requirements for use of E.P.A. designated "Restricted Pesticide".
 - 14.12 Identify and distinguish between harmful and beneficial crop insects.
 - 14.13 Appraises performance of recommended insecticides.

- 14.14 Selects the best insect control program in terms of economic costs, returns, and environmental impact.
- 14.15 Evaluates life cycle of insects to determine appropriate control procedures.
- 14.16 Identifies methods by which insects are spread.
- 14.17 Operates insect control equipment and power sources safely.
- 14.18 Performs field adjustments and minor field repairs on insect control equipment.
- 14.19 Maintains necessary licenses for use of restricted pesticides.
- 15.0 Manages a plant disease control program to reduce losses and maximize yield.
 - 15.1 Operates disease control equipment and power sources safely.
 - 15.2 Performs field adjustments and minor field repairs on disease control equipment and power sources.
 - 15.3 Calibrates disease control applicators correctly.
 - 15.4 Cleans and disinfects all equipment and storage facilities with live steam or chemicals to control diseases.
 - 15.5 Interprets and follows chemical label directions for fungicide storing, mixing, handling.
 - 15.6 Identifies dangers of chemical carry residues in soil and application equipment.
 - 15.7 Identifies crop diseases and interprets their effect.
 - 15.8 Identifies and appraises the performance of recommended pesticides.
 - 15.9 Identifies the methods by which diseases are spread.
 - 15.10 Evaluates environmental impact of disease control programs.
 - 15.11 Selects a recommended disease control program in terms of expected costs and returns.
- 16.0 Manages a weed-control program to reduce losses and maximize yield.
 - 16.1 Calibrates herbicide applicators.
 - 16.2 Identifies weeds that are a major nuisance to the crops and livestock within the local community and plan an effective herbicide or cultural weed control program. (Pre-emergence, post-emergence, cost, rate, methods, and dangers.)
 - 16.3 Evaluates economic impact of weeds.
 - 16.4 Identifies the methods with which weeds spread.
 - 16.5 Operates mechanical weed control equipment, herbicide application equipment, and power sources safely.
 - 16.6 Performs field adjustments and minor field repairs on weed-control program to reduce losses and maximize yield.
 - 16.7 Reads and complies with manufacturer's label directions and legal requirements affecting recommended herbicide application, timing, and safety.
 - 16.8 Stores, mixes, and handles herbicides conforming to manufacturer's label directions.
 - 16.9 Meets state requirements for herbicide use.
 - 16.10 Recognizes dangers of carryover of herbicide residues in the soil and in application equipment.
 - 16.11 Appraises the performance of recommended herbicides.

- 17.0 Selects and applies fertilizers to maximize return.
 - 17.1 Applies fertilizer.
 - 17.2 Plans a fertility program using combinations of nutrient sources to be applied at designated times in specific amounts.
 - 17.3 Determines the crop's nutrient requirements.
 - 17.4 Compares yield results from using different sources of nutrients and soil amendments.
 - 17.5 Recognizes deficiency symptoms.
 - 17.6 Takes and prepares soil sample for testing and interprets results (pH, available nutrients, type).
 - 17.7 Collects leaf sample for analysis.
 - 17.8 Recognizes the various methods of fertilizer application.
 - 17.9 Determines the rate of fertilization per application to receive maximum return per (fertilizer) unit applied (lbs. applied per acre).
 - 17.10 Performs field adjustments and minor field repairs on fertilizer equipment.
 - 17.11 Operates and calibrates fertilizer application equipment.
 - 17.12 Compares and calculates the cost of fertilizer (application methods, cost per unit per nutrients, return for investment).
- 18.0 Harvests crops to ensure maximum yield.
 - 18.1 Determines best method and time of harvest.
 - 18.2 Measures harvesting losses and determines the necessary machine adjustments.
 - 18.3 Determines whether it is more economical to own harvesting equipment or to hire a custom operator.
 - 18.4 Uses machinery efficiently to minimize harvest time.
 - 18.5 Identifies safety hazards present in harvesting and transporting crops.
 - 18.6 Operates harvest equipment at correct field travel and PTO speed.
 - 18.7 Performs field adjustments and minor field repairs on harvest equipment.
 - 18.8 Identifies weather and soil conditions essential for maximum harvest efficiency and minimum crop injury.
 - 18.9 Evaluates washing, grading, packing, and storage facilities in relation to cost and returns.
 - 18.10 Selects and applies defoliant.
- 19.0 Operates and maintains engines, implements, and equipment for efficient operation.
 - 19.1 Repairs and services air and exhaust system.
 - 19.2 Repairs and services fuel systems.
 - 19.3 Diagnoses, replaces, and/or services electrical systems.
 - 19.4 Has a basic understanding of the operation of hydraulic systems.
 - 19.5 Adjusts and replaces clutch components.
 - 19.6 Repairs components of the PTO.
 - 19.7 Services and repairs components of the final drive, differential, and transmission.
 - 19.8 Services and repairs brake system components.
 - 19.9 Properly stores equipment not in use.

- 19.10 Performs proper maintenance and servicing of machinery according to operator's manual.
- 19.11 Inspects equipment for potential breakdowns and safety hazards.
- 19.12 Maintains and services tires on machines as specified in the operator's manual.

- 1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.
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- 1.1 **TASK:** Develops accurate record systems for the business including records on production performance, income and expense, labor costs, marketing, equipment maintenance and use, and depreciation.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a list of randomly arranged data pertaining to production, income and expense, marketing, etc.,

EVALUATION: arrange the data, according to type, into a record system for the agribusiness.

STANDARD: All individual pieces of data should be correctly identified and arranged on the corresponding record.

STUDENT LEARNING EXPERIENCES:

1. Discuss the different types of records needed in the operation of the agribusiness firm.
2. Describe the uses of the different types of records i.e. internal control, acquisition of credit, taxes, etc.
3. Describe the role of the computer in recordkeeping.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Develop a record-keeping system for one of their activities, i.e. raising livestock.
2. Read the reference material to gain further understanding of the importance of recordkeeping in an agribusiness.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. File folders and a file cabinet.
2. A computer with database software.

RESOURCES:

AGRICULTURAL BUSINESS INSTRUCTIONAL RESOURCE GUIDE. Department of Education, Commonwealth of Virginia, Richmond, VA. Chapter 3.5. 1983.

James, S. C. FARM ACCOUNTING AND BUSINESS ANALYSIS. Iowa State University Press, Ames, IA. Chapter 1, pp. 3-13. 1979.

- 1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.
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- 1.2 **TASK:** Summarizes and analyzes records to improve efficiency.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the production records for an agribusiness firm,

EVALUATION: compare production data with past performance of the firm, using ratios, averages and graphical means.

STANDARD: The student should compose a one-page summary of the performance of the firm, with an accompanying graph showing performance to date.

STUDENT LEARNING EXPERIENCES:

1. Describe three different types of graphs and when you would use each.
2. Discuss the different ratios and averages that can be obtained from time-series production data.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Students should consult the resources listed for additional information about summarizing and analyzing the production and performance records of the firm.
2. Develop a analysis/summary of the supplied production data using a computer with wordprocessing, spreadsheet and graphics software.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A computer with wordprocessing, spreadsheet and graphics software, or a calculator and graph paper.

RESOURCES:

AGRICULTURAL BUSINESS INSTRUCTIONAL RESOURCE GUIDE. Department of Education, Commonwealth of Virginia, Richmond, VA. Chapter 3.7. 1983.

James, S. C. FARM ACCOUNTING AND BUSINESS ANALYSIS. Iowa State University Press, Ames, IA. 2ND ED. Chapter 6, pp. 109-123, Chapter 7, pp. 124-150. 1979.

- 1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.
-

- 1.3 **TASK:** Manages employees, including hiring, firing, developing work schedules and training.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical situation in which you are the manager of an agribusiness firm and are facing a situation in which you may have to fire an employee and hire a new employee,

EVALUATION: describe how you would conduct the firing of a current employee, and the hiring of a new one. Also design a training program for a new employee, developing a new work schedule, which will incorporate the new hire.

STANDARD: The firing must convey to the ex-employee the reason why he is being fired, without causing undue bad feeling. The hiring requires the determination of the qualifications necessary to the position and the selection of the best qualified candidate. Training and work scheduling must take into account the new hire's past work experience, progress in the training program and the current employment needs of the firm.

STUDENT LEARNING EXPERIENCES:

1. Select a job with which you are familiar and describe the qualifications necessary to adequately describe the position.
2. Distinguish between the "most" (over) qualified candidate and the "best" (most suitable) qualified candidate for a new job.
3. Enumerate three factors which are important in designing a work schedule.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Read the resource material on training programs and interviewing.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Sample resumes, (also see competency 1.22).

RESOURCES:

AGRICULTURAL BUSINESS INSTRUCTIONAL RESOURCE GUIDE. Department of Education, Commonwealth of Virginia, Richmond, VA. Chapters 1.1, 1.4, 1.5, 1.6, 1.7, 14.26, 14.27, 14.45. 1983.

- 1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.
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- 1.4 **TASK:** Develops and interprets an income statement.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the pertinent financial information, (Net sales, Cost of Goods Sold, Operating and Interest expenses and Income taxes),

EVALUATION: develop and interpret an income statement.

STANDARD: All accounts must be properly arranged on the income statement and the net income correctly calculated.

STUDENT LEARNING EXPERIENCES:

1. Name two ratios which can be calculated from information on the income statement.
2. Discuss the information provided by the ratios named above.
3. Compare the income statement you have developed to those found in an annual report of a company of your choice.
4. Describe the differences between your income statement and that of the company you have chosen.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Consult the appropriate text for further information in regard to the income statement.
2. Construct an income statement. Have them calculate (1.12) net income.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Computer with spreadsheet software and/or a calculator.
2. Annual reports from several agribusinesses.

RESOURCES:

"How to Read a Financial Report." Merrill, Lynch, Pierce, Fenner, and Smith, Inc. 5TH ED. p. 18. 1984.

1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.

1.5 **TASK:** Develops and understands a break-even analysis for an agribusiness.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the financial data (i.e. fixed and variable costs, total and marginal revenue) for an agribusiness product,

EVALUATION: determine the break-even point in sales.

STANDARD: The break-even point must be correctly calculated and demonstrated graphically.

STUDENT LEARNING EXPERIENCES:

1. Discuss the importance of the break-even point in evaluating the performance of the firms' activities.
2. Name three factors which are important in calculating the break-even point, i.e. quantity produced, fixed costs and variable costs.
3. Demonstrate graphically the break-even point for a situation to be provided by the instructor.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Read about how to determine the break-even point for an economic activity.
2. Determine the breakeven point for a student activity, such as a dance, bake-sale or dinner.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A computer with spreadsheet and graphics software, or a calculator and graph paper.

RESOURCES:

Ashmore, M. Catherine, and Sandra G. Printz. PACE, "Managing the Finances", Unit 16, Ohio State University, Columbus, OH. Research and Development Series No. 240 CB 16, pp. 12-17. Revised. 1982.

Devino, Gary T. AGRIBUSINESS FINANCE. Interstate Printers and Publishers, Danville, IL. pp. 37-46. 1981. Revised. 1982.

Roy, E.P., F.L. Corty and G.D. Sullivan. ECONOMICS--APPLICATIONS TO AGRIBUSINESS AND AGRICULTURE. Interstate Printers and Publishers, Danville, IL. pp. 501-504. 1981.

- 1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.
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- 1.6 **TASK:** Interprets a balance sheet.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the balance sheet of an agribusiness,

EVALUATION: correctly interpret the financial condition of the firm.

STANDARD: The relative importance of all accounts must be indentified and interpreted (i.e., fixed and current assets, long and short term liabilities, net worth, accounts receivable and payable).

STUDENT LEARNING EXPERIENCES:

1. Name two agribusinesses and indicate which one you would expect to have a larger amount of fixed assets.
2. Describe the differences in the construction of the balance sheets you have selected, such as differences in account names.
3. Calculate financial ratios which can be obtained from information on the balance sheet.
4. Discuss the information obtained from calculating the ratios.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Students should consult the appropriate reference text for further information about the balance sheet.
2. Construct a balance sheet for a student activity, such as a bake sale or club.
3. Make up a personal balance sheet; include assets, liabilities and calculate net worth. (see task 1.12)

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Several annual reports from agribusinesses.
2. A computer with spreadsheet software and/or a calculator.

RESOURCES:

Ashmore, M. Catherine, and Sandra G. Printz. PACE. "Managing the Finances". Unit 16. Ohio State University, Columbus, OH. Research and Development Series No. 240 CB 16. pp. 9-13. Revised. 1982.

Devino, Gary T. AGRIBUSINESS FINANCE. The Interstate Printers and Publishers, Danville, IL. pp. 4-16. 1981.

"How to Read a Financial Report". Merrill, Lynch, Pierce, Fenner and Smith, Inc. 5TH ED. p. 8. 1984.

Roy, E.P., F.L. Corty and G.D. Sullivan. ECONOMICS--APPLICATIONS TO AGRIBUSINESS AND AGRICULTURE. The Interstate Printers and Publishers, Danville, IL. pp. 478-481. 1981.

- 1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.
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- 1.7 **TASK:** Develops and analyzes a cash flow statement for an agribusiness.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a year's financial data for an agribusiness,

EVALUATION: develop and analyze a cash flow statement.

STANDARD: The resultant cash flow should lay out monthly flows and include all income, expenditures, loan payments, new loans, interest payments correctly arranged to show net monthly cash flow (+ or -).

STUDENT LEARNING TASKS:

1. Discuss the importance of the cash flow statement in relation to the other financial performance measures you have studied.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A computer with spreadsheet software or a calculator.
2. A time series of financial data for an agribusiness.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Construct a personal cash flow statement.
2. Develop a cash flow statement for a student club or activity from the beginning of the school year until the present.
3. Students should also read suggested reference material on the cash flow statement.

RESOURCES:

Ashmore, M. Catherine, and Sandra G. Pritz. PACE "Managing the Finances", Unit 16. Ohio State University, Columbus OH. Research and Development Series No. 240, CB 16. pp. 2-6. Revised. 1982.

Devino, Gary T. AGRIBUSINESS FINANCE. The Interstate Printers and Publishers, Danville, IL. pp. 61-70. 1981.

1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.

1.8 **TASK:** Identifies the sources and uses of credit in an agribusiness.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given loan requirements (repayment terms, legal terms, interest charges, security and collateral requirements) and different government and private organizations from which loans are available,

EVALUATION: select the source and fill out the necessary documents to obtain a loan for an agribusiness activity.

STANDARD: The loan source and terms must be in accordance with the type activity being financed.

STUDENT LEARNING EXPERIENCES:

1. Name the sources of credit for the following agribusiness assets: a tractor, a feed mill, and a warehouse.
2. Name the sources of credit for the following agribusiness financing situations: short term operating loans and real estate loans.
3. Outline the structure of the agricultural credit system.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Consult the resources to learn more about the structure of the ag credit agencies.
2. Collect loan and credit applications for the different public and private loan agencies in your area.
3. The applications that are gathered can be filled out by the students for an asset or activity they have selected. They should explain why they chose the agency they did and what other sources of credit are available to them. They should also explain what agencies would not extend credit for the asset or activity they have chosen. (See task 1.14 Understands sources of credit).
4. After filling out the loan applications have students indicate the loan requirements, i.e. (repayment terms, legal terms, interest charges, security and collateral requirements). (See task 1.13 Understands loan requirements).

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A computer with spreadsheet software and/or a calculator.

RESOURCES:

Ashmore, M. Catherine, and Sandra G. Printz. PACE. "Financing the Business", Unit 8, Ohio State University, Columbus OH. Research and Development Series No. 240 CB 8, pp. 23-29. Revised. 1982.

Devino, Gary T. AGRIBUSINESS FINANCE. The Interstate Printers and Publishers, Danville, IL. pp. 131-143. 1981.

James, S.C. FARM ACCOUNTING AND BUSINESS ANALYSIS. Iowa State University Press, Ames, IA. 2ND ED. pp.33-45, 1979.

1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.

1.9 **TASK:** Applies risk management strategies.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given an agribusiness organization,

EVALUATION: properly identify, apply and calculate the cost/benefit of different risk management (insurance, hedging, belonging to a marketing cooperative, etc.) strategies in that agribusiness.

STANDARD: The risk-management strategy must suit the agribusiness asset being protected or commodity being produced.

STUDENT LEARNING EXPERIENCES:

1. Name three risk-management strategies and indicate which is the most common.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Select an aspect of some agribusiness, i.e. production of a commodity, at the same time selecting a risk-management strategy for that aspect.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A computer with spreadsheet software and/or a calculator.

RESOURCES:

Ashmore, M. Catherine, and Sandra G. Pritz. PACE. "Protecting the Business", Unit 18. Ohio State University, Columbus, OH. Research and Development Series No. 240 CB 18. pp. 7-15. Revised. 1982.

Roy, E.P., F.L. Corty and G.D. Sullivan. ECONOMICS--APPLICATIONS TO AGRIBUSINESS AND AGRICULTURE. The Interstate Printers and Publishers, Danville, IL. p. 319. 1981.

- 1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.
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- 1.10 **TASK:** Completes individual and business tax forms.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the various personal and business tax forms which must be filled out by the agribusiness manager,

EVALUATION: correctly fill out forms.

STANDARD: Forms must be correctly filled out from both a numerical and procedural standpoint.

STUDENT LEARNING EXPERIENCES:

1. Discuss the personal tax implications of the different agribusiness organizational forms, i.e. sub-chapter S, or sub-chapter C corporations, sole proprietorship, general and limited partnerships, etc.
2. Discuss how the new tax reforms will affect agribusinesses.
3. Demonstrate how to correctly complete personal and business tax forms.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Read the reference material in regard to personal and business taxes and organizational models of agribusinesses, (by ownership).

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Tax forms with instructions, a calculator, or computer with a spreadsheet program.

RESOURCES:

RESOURCE UNIT 3: "ORGANIZATION OF AGRICULTURAL BUSINESSES". Agricultural Education Section, Department of Vocational Education, Phoenix, AZ., and Department of Agricultural Education, The University of Arizona, Tucson, AZ. pp. 7-12, HO 1a-d. 1971.

- 1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.
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- 1.11 **TASK:** Evaluates investment alternatives.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given various investment alternatives for an agribusiness,

EVALUATION: evaluate said alternatives in terms of feasibility and profitability.

STANDARD: The investment alternative chosen must be both feasible, (the agribusinessman has the land, capital and labor available), and obtain maximum profit for the agribusiness.

STUDENT LEARNING EXPERIENCES:

1. Introduce ratio analysis; name three measures of profitability (ratios).
2. An agribusinessman has identified a potentially high-profit venture, discuss why profitability is not the only criteria by which the feasibility of an agribusiness venture must be measured.
3. Define synergy and its meaning in the context of an investment alternative for an agribusinessman.
4. Cite at least one risk which is associated with each investment alternative proposed.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Read the references in regard to the evaluation of investment alternatives.
2. Give each student a brief description of an agribusiness and provide them with several investment alternatives, i.e. growing a crop, investing in bonds, or putting their money in a savings account.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A computer with spreadsheet software.

RESOURCES:

Ashmore, M. Catherine, and Sandra G. Pritz. PACE. "Managing the Finances", Unit 16. Ohio State University, Columbus, OH. Research and Development Series No. 240 CB 16. pp. 9-13. Revised. 1982.

Devino, Gary T. AGRIBUSINESS FINANCE. The Interstate Printers and Publishers, Danville, IL. pp. 4-16. 1981.

James, S.C. FARM ACCOUNTING AND BUSINESS ANALYSIS. Iowa State University Press, Ames, IA. 2ND ED. pp. 124-150. 1979.

Roy, E.P., F.L. Corty and G.D. Sullivan. ECONOMICS--APPLICATIONS TO AGRIBUSINESS AND AGRICULTURE. The Interstate Printers and Publishers, Danville, IL. pp. 478-481. 1981.

1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping
 functions for efficient operation of the
 agricultural business.

1.12 **TASK:** Calculates net worth, net income.

PERFORMANCE OBJECTIVE:

 See Tasks 1.4 and 1.6

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

RESOURCES:

1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping
 functions for efficient operation of the
 agricultural business.

1.13 **TASK:** Understands loan requirements (repayment terms, legal terms,
 interest charges, security requirements, etc.).

PERFORMANCE OBJECTIVE:

 See Task 1.8

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

RESOURCES:

1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping
functions for efficient operation of the
agricultural business.

1.14 **TASK:** Understands sources of credit.

PERFORMANCE OBJECTIVE:

See Task 1.8

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

RESOURCES:

- 1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.
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1.15 **TASK:** Contracts for services.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical agribusiness which requires certain services to be performed, (i.e. pesticide application, custom cutting or machinery installation),

EVALUATION: identify and select contractors for specified services.

STANDARD: At least three quotes must be obtained for each service and the reasons for selecting the contractor must be stated, i.e. most economical, good reputation, most experienced, etc.

STUDENT LEARNING EXPERIENCES:

1. Name three sources of information about potential service contractors.
2. In the event an agribusinessman feels that the services that have been performed are not up to par, identify what steps he can take to remedy the situation.
3. Obtain a service contract from a selected contractor and examine and put into plain speech the fine print.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Obtain several quotes for a service, i.e. the installation of a wall switch or clearing a drain line, then have them compare and contrast them.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Selected service contracts.

RESOURCES:

THE YELLOW PAGES. Mountain Bell Telephone Company, Phoenix, AZ. 1986.

1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.

1.16 **TASK:** Budgets available resources.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a list of resources that would be available to a specific agribusiness, (i.e. capital, labor, etc.)

EVALUATION: budget the available resources.

STANDARD: The budget which is made up must maximize profit to the agribusiness yet still not exceed the constraints of the available resources.

STUDENT LEARNING EXPERIENCES:

1. List the steps which must be taken to construct a budget.
2. Construct a budget model spreadsheet, (on a micro-computer, if available). Demonstrate a "what if?" situation, i.e. "what if" an agribusinessperson decides to double the size of their business.
3. In the above model show what would happen if the business size doubled and what additional resources would be necessary.
4. Define linear programming and its applicability to an agribusiness.
5. Compare briefly: cash flow and conventional budgeting.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Prepare a simple personal budget.
2. Read the reference material about budgeting.
3. A budget for a student activity can also be prepared.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A computer with spreadsheet software, or a calculator and ledger paper.

RESOURCES:

James, S.C. FARM ACCOUNTING AND BUSINESS ANALYSIS. Iowa State University Press, Ames, IA. 2ND ED. pp. 211-250. 1979.

- 1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.
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- 1.17 **TASK:** Determines the production performance of each enterprise in relation to acceptable standards.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical agribusiness composed of several different enterprises,

EVALUATION: determine the production performance of each enterprise in relation to acceptable standards.

STANDARD: The fixed and variable costs used in the development of the performance measures must be correctly allocated to each enterprise. Also the performance measures must be expressed in the same units as the standard.

STUDENT LEARNING EXPERIENCES:

1. Describe how to develop livestock and crop enterprise performance measures.
2. Name two common measures of livestock and crop enterprise performance.
3. Explain the difference between cash cost and opportunity cost in evaluating enterprise alternatives.
4. Cite two ways in which enterprise records can be helpful to the agribusiness manager.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Read the resources regarding enterprise analysis.
2. Presented with two enterprise alternatives have students develop performance measures and select the enterprise which is a better user of available resources (is more profitable).

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A computer with spreadsheet software or a calculator and ledger paper.

RESOURCES:

James, S.C. FARM ACCOUNTING AND BUSINESS ANALYSIS. Iowa State University Press, Ames, IA. 2ND ED. pp. 124-150. 1979.

- 1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.
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- 1.18 **TASK:** Takes an accurate inventory.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a scale model warehouse which contains several different commodities,

EVALUATION: take an accurate inventory of the warehouse.

STANDARD: Each commodity must be counted correctly and accounted for on an inventory control sheet.

STUDENT LEARNING EXPERIENCES:

1. Tell why it is often necessary to conduct an inventory as quickly as possible. (To minimize downtime.)
2. Demonstrate how to convert quantities counted into meaningful units, (i.e. cubic feet of grain into bushels.)
3. Define the true purpose of the inventory.
4. Discuss common methods used in valuing agribusiness (farm) properties.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Conduct an inventory of a scale model warehouse. There should be both bulk and individual items in the warehouse. Taking the inventory should involve conversion of quantities into meaning units.
2. Read the reference material in regard to inventories.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A scale model warehouse, inventory control sheets. (An attempt at realism should be made, however if inventory control sheets are not available simple lists will suffice.)

RESOURCES:

James, S.C. FARM ACCOUNTING AND BUSINESS ANALYSIS. Iowa State University Press, Ames, IA. 2ND ED. pp. 46-53. 1979.

1.0 COMPETENCY/SKILL: Performs management and recordkeeping functions for efficient operation of the agricultural business.

1.19 TASK: Develops a business plan.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given that the student has chosen an agribusiness area in which s(he) is interested,

EVALUATION: develop a business plan for the agribusiness.

STANDARD: The business plan should include the following:

1. Description of the business and its overall goals.
2. Description of the proposed project or investment.
3. Amount and type of financing requested and financing plan.
4. Products or services to be sold.
5. Markets and marketing strategy.
6. Organization and management team.
7. Personnel, number of employees and skill level.
8. Physical facilities.
9. Community impact.
10. Financial statements, (income statement and balance sheet.)

STUDENT LEARNING EXPERIENCES:

1. State the main purpose of the business plan. (To obtain financing.)
2. Describe how to evaluate a business plan.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Read the reference material in regard to formulating a business plan.
2. Construct a business plan for an agribusiness that they are interested in. (A computer may be used in developing the financial statements.)

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A computer with spreadsheet software.

RESOURCES:

Richards, J.W. FUNDAMENTALS OF DEVELOPMENT FINANCE. Praeger Publishers, Division of CBS, New York, N.Y. pp. 137-163. 1983.

1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping
functions for efficient operation of the
agricultural business.

1.20 **TASK:** Plans a public relations program for the business.

PERFORMANCE OBJECTIVE:

CONDITIONS: For a hypothetical agribusiness firm,

EVALUATION: plan a public relations program.

STANDARD: The program should reflect the desired corporate
image to the public as demonstrated by:

1. Annual reports for stockholders
2. Newsletters for employees
3. Press releases for the media
4. Internal company attitude toward employee hiring,
 firing and promotions
5. External attitude towards community
 responsibility and involvement

STUDENT LEARNING EXPERIENCES:

1. Discuss the attributes of a good press release.
2. Define the purpose of a corporate logo.
3. List three goals of the employee newsletter.
4. Give two examples of both internal and external company
 communications.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Read the reference material in order to find out more about public relations programs.
2. Bring in examples of corporate logos, and later have them design a logo for a company.
3. Students should prepare and give a speech about a topic of their choice.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Samples of annual reports, and company newsletters and press releases.

RESOURCES:

Peake, J. PUBLIC RELATIONS IN BUSINESS. Harper and Row Publishers, New York, N.Y. 1980.

1.0	COMPETENCY/SKILL:	Performs management and recordkeeping functions for efficient operation of the agricultural business.
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1.21 **TASK:** Operates computers and calculators.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a set of simple assignments, (typing a memo, calculating a ratio, adding a column of numbers),

EVALUATION: operate computers and calculators.

STANDARD: All assignments should be correctly completed.

STUDENT LEARNING EXPERIENCES:

1. Demonstrate different brands of computers and computer software, including word-processing, spreadsheet and database software.
2. Demonstrate different types of calculators, i.e. simple, business and scientific.
3. Discuss how computers and calculators are used in today's agribusinesses.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Use computers to complete the following assignments:
 - a. type a memo
 - b. add a column of numbers and divide each entry of that column into another column of equal length.
 - c. construct a simple database.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Computers with spreadsheet, word-processing and database software, four-function, scientific and business calculators.

RESOURCES:

- 1.0 **COMPETENCY/SKILL:** Performs management and recordkeeping functions for efficient operation of the agricultural business.
-

- 1.22 **TASK:** Completes resumes and job applications.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given an advertisement and an application blank for an agribusiness job opening,

EVALUATION: complete the application, along with a cover letter and resume, in the manner of a qualified applicant.

STANDARD: The application and resume must reflect the qualifications called for in the advertisement. They must be typewritten and error-free. (The application may be neatly printed.)

STUDENT LEARNING EXPERIENCES:

1. Discuss the structure of the current agribusiness job market.
2. List three do's and three don'ts of resume writing.
3. Describe three elements of successful job-hunting techniques.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Cut out agribusiness job opening notices from the want-ads of local newspapers or periodicals.
2. Assign selected readings from the references for students to increase their knowledge of resume construction.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Job application forms, resume samples, and job notices.
2. Computer with word processing software.

RESOURCES:

Weck, T.L. MOVING UP QUICKLY: HOW TO USE EXECUTIVE JOB-HUNTING TECHNIQUES AND LAND A BETTER JOB. John Wiley and Sons, New York, NY. 1979.

2.0 **COMPETENCY/SKILL:** Applies approved practices in marketing and purchasing to maximize return to the business.

2.1 **TASK:** Purchases supplies, land and livestock for the business.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the need for supplies, land and livestock in an agribusiness,

EVALUATION: identify and select sources of supply.

STANDARD: An item from each category must be chosen, i.e. seed, a section of farmland, and a feeder calf. Three sources of supply for each item must be identified, and the most economical picked-out. (See Task 2.3)

STUDENT LEARNING EXPERIENCES:

1. Discuss why the cheapest source of supply is not necessarily the most economical.
2. Demonstrate, using a telephone and the yellow pages, how to obtain quotes for supplies or assets. If possible, do the same for a section of farmland and feeder calves or other agribusiness assets/supplies of your choice.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Obtain three quotes for an agribusiness asset or supply of their choice.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A telephone

RESOURCES:

THE YELLOW PAGES. Mountain Bell Telephone Co. Phoenix, AZ. 1986.

- 2.0 **COMPETENCY/SKILL:** Applies approved practices in marketing and purchasing to maximize return to the business.
-

- 2.2 **TASK:** Analyzes trends in supply and demand of a commodity.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a commodity which is commonly grown in Arizona, or used by Arizona agribusinesses,

EVALUATION: analyze trends in supply and demand of that commodity.

STANDARD: The analysis must include an identification of the equilibrium price and factors which can cause shifts in the demand or supply curves of the selected commodities.

STUDENT LEARNING EXPERIENCES:

1. Describe, in general, factors which affect supply and demand trends for commodities.
2. Define elasticity in supply and demand of commodities.
3. Demonstrate some applications of supply and demand analysis, i.e. how exports affect food prices, the effect of food price "freezes", the affect of cost-reducing farm technology, etc.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Select a commodity and construct hypothetical supply and demand curves for it; they should then write a brief analysis of the curve, meeting the specifications of the above standard.
2. Read the material on supply/demand analysis in the student reference below.
3. Gather magazine or newspaper articles which illustrate the factors affecting supply and demand of commodities.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A selection of newsmagazines or agribusiness magazines, i.e. Feedstuffs.

RESOURCES:

Kohls, R.L. and J.N. Uhl. MARKETING OF AGRICULTURAL PRODUCTS. Macmillan Publishers, New York, N.Y. 5TH ED. 1980.

2.0 **COMPETENCY/SKILL:** Applies approved practices in marketing and purchasing to maximize return to the business.

2.3 **TASK:** Identify the most economical sources of supply.

PERFORMANCE OBJECTIVE:

See Task 2.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

RESOURCES:

2.0 **COMPETENCY/SKILL:** Applies approved practices in marketing and purchasing to maximize return to the business.

2.4 **TASK:** Identifies and utilizes sources of market information including international markets.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given available market information resources,

EVALUATION: identify and utilize the market information for the benefit of the firm.

STANDARD: A market must be identified which maximizes return to the firm in the sale of a commodity. (See Task 2.5)

STUDENT LEARNING EXPERIENCES:

1. Define the term "commodity".
2. Interpret market reports, market receipts and production statistics for several common commodities. (See Task 2.6)
3. Identify and use market trends and cycles in selecting a market for several commodities. (See Task 2.7)
4. Analyze trends in supply and demand of a commodity. Describe how supply/demand trends of the commodity are affected by substitutes for the commodity. (See Task 2.2)
5. Graph supply and demand curves for a commodity and describe how the equilibrium price is determined.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Select a commodity and conduct a hypothetical sale of that commodity. (See Task 2.10) In analyzing the market alternatives the student should, a. interpret a sale contract, (See Task 2.12) and b. determine market costs.
2. Read the reference material in regard to agricultural marketing.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Graph paper, or a computer with spreadsheet/graphics software.

RESOURCES:

Bronson, Robert E. and Douglas G. Norvell. INTRODUCTION TO AGRICULTURAL MARKETING. McGraw-Hill Book Co. New York, NY. Chapter 1, pp. 3-6 and Chapter 7. 1983.

Besant, Lloyd and Nancy Keefer. THE MARKET PLACE. Chicago Board of Trade. Chapter 1. 1983.

2.0 COMPETENCY/SKILL: Applies approved practices in marketing and purchasing to maximize return to the business.

2.5 TASK: Selects the market which will provide maximum return.

PERFORMANCE OBJECTIVE:

See Task 2.4

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

RESOURCES:

2.0 **COMPETENCY/SKILL:** Applies approved practices in marketing and purchasing to maximize return to the business.

2.6 **TASK:** Interprets market reports, market receipts and production statistics.

PERFORMANCE OBJECTIVE:

See Task 2.4

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

RESOURCES:

2.0 COMPETENCY/SKILL: Applies approved practices in marketing and purchasing to maximize return to the business.

2.7 TASK: Identifies and uses market trends and cycles in marketing.

PERFORMANCE OBJECTIVE:

See Task 2.4.

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

RESOURCES:

- 2.0 **COMPETENCY/SKILL:** Applies approved practices in marketing and purchasing to maximize return to the business.
-

- 2.8 **TASK:** Determines market costs.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given an agribusiness (i.e. food) product,

EVALUATION: determine the market costs for that product.

STANDARD: The approximate levels in percentages of the marketing costs must be identified.

STUDENT LEARNING EXPERIENCES:

1. Discuss the cost components of the marketing bill and their relative size, i.e. rent, depreciation, advertising, business taxes, transportation, packaging, corporate profits, interest, repairs, and labor costs.
2. Define the "farm-retail price spread."
3. Illustrate, using common foods and or commodities, the interrelationships of the marketing margin and food prices.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Determine the marketing costs for a commodity, food or agribusiness product of their choice.
2. Read the references in regard to marketing costs.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A calculator or computer with spreadsheet software.

RESOURCES:

Kohls, R.L. and J.N. Uhl. **MARKETING OF AGRICULTURAL PRODUCTS.** Macmillan Publishers, New York, N.Y. 5TH ED. 1980.

2.0 **COMPETENCY/SKILL:** Applies approved practices in marketing and purchasing to maximize return to the business.

2.9 **TASK:** Determines feasibility of participating in futures market contracts.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given that one is producing a commodity, i.e. wheat,

EVALUATION: determine the feasibility of participating in futures market contracts.

STANDARD: The minimum quantity of the commodity that is needed to participate in a futures contract must be identified along with how the market risk is affected by the transaction.

STUDENT LEARNING EXPERIENCES:

1. Illustrate the difference between the cash and futures market.
2. Explain how a commodity "hedge" takes place.
3. Cite two reasons why hedging is used by producers and commodity processors.
4. Demonstrate how to use a "t-account" in analyzing a hedge.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Construct a hedge for a commodity of their choice using a "t-account" to demonstrate its effect.
2. Read the Chicago Board of Trade and other references listed below to learn more about the commodity market.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Price data on selected commodities for futures and cash markets. (Available in Feedstuffs and/or the Wall Street Journal.)

RESOURCES:

Bronson, Robert E. and Douglas G. Norvell. INTRODUCTION TO AGRICULTURAL MARKETING. McGraw-Hill Book Co., New York, NY. Chapter 6. 1983.

Besant, Loyd and Nancy Keefer. THE MARKET PLACE. Chicago Board of Trade. Chapter 5. 1983.

2.0 **COMPETENCY/SKILL:** Applies approved practices in marketing and purchasing to maximize return to the business.

2.10 **TASK:** Conducts a sale.

PERFORMANCE OBJECTIVE:

See Task 2.4 and 2.5

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

RESOURCES:

2.0 **COMPETENCY/SKILL:** Applies approved practices in marketing and purchasing to maximize return to the business.

2.11 **TASK:** Evaluates government programs affecting agricultural businesses.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical agribusiness,

EVALUATION: evaluate government programs affecting that business.

STANDARD: An agribusiness must be selected and government programs impacting that agribusiness identified.

STUDENT LEARNING EXPERIENCES:

1. Discuss the history of U.S. farm policy.
2. Describe three farm policy techniques, i.e. storage loans, government purchases, and target price deficiency payments. Use supply and demand analysis in your description.
3. Distinguish between restrictive, facilitating, and permissive marketing regulations.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Select a commodity and identify both a farm policy and a marketing regulation which affects that commodity.
2. Bring in newspaper or magazine clipping which address government regulation issues in agribusinesses.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Newspapers and magazines dealing with agribusinesses, i.e. Feedstuffs, etc.

RESOURCES:

Kohls, R.L. and J.N. Uhl. MARKETING OF AGRICULTURAL PRODUCTS.
Macmillan Publishers, New York, N.Y. 5TH ED. 1980.

2.0 **COMPETENCY/SKILL:** Applies approved practices in marketing and purchasing to maximize return to the business.

2.12 **TASK:** Negotiates and interprets buyer-seller contacts.

PERFORMANCE OBJECTIVE:

See Task 1.15

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

RESOURCES:

2.0 **COMPETENCY/SKILL:** Applies approved practices in marketing and purchasing to maximize return to the business.

2.13 **TASK:** Prepares advertisements.

PERFORMANCE OBJECTIVE:

See Task 1.20

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

RESOURCES:

2.0 **COMPETENCY/SKILL:** Applies approved practices in marketing and purchasing to maximize return to the business.

2.14 **TASK:** Identifies damage to agricultural products which occurs from improper storage and transportation methods.

PERFORMANCE OBJECTIVE:

See Task 1.15

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

RESOURCES:

2.0 **COMPETENCY/SKILL:** Applies approved practices in marketing and purchasing to maximize return to the business.

2.15 **TASK:** Selects transportation.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical quantity of a common commodity grown in Arizona,

EVALUATION: select transportation for the commodity to a logical destination.

STANDARD: The mode of transportation selected must be reasonable in terms of economics, route and the method of loading the commodity.

STUDENT LEARNING EXPERIENCES:

1. Identify damage to agricultural products which occurs from improper storage and transportation methods. (Spoilage, weathering, shrinkage, mold, bacterial or chemical contamination, etc.) (2.14).
2. Discuss the physical functions of marketing (storage, transportation and processing) in the light of the other marketing (exchange and facilitating) functions.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Plan the transport of a given amount of one of Arizona's commodities to the east coast and then overseas. Make sure they identify any potential problems which could arise during transport.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. A list of truck, rail, and freighter freight rates.

RESOURCES:

Kohls, R. L. and J. N. Uhl. **MARKETING OF AGRICULTURAL PRODUCTS.** Macmillan Publishing Co., New York, NY. 1980.

3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.

3.1 **TASK:** Identifies signs of approaching birth and assists in delivering young.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a pregnant cow approaching parturition,

EVALUATION: identify signs which may be observed before calving time.

STANDARD: The student must identify the following:

1. Distended udder
2. Milky colostrum
3. A marked shrinkage or falling away of the muscular part of the region of the tailhead and pinbones
4. A noticeable enlargement and swelling of the vulva
5. The immediate indications that the cow is about to calve are:
 - a. Extreme nervousness and uneasiness
 - b. Separation from the rest of the herd
 - c. Muscular exertion and distress

STUDENT LEARNING EXPERIENCES:

1. Discuss the proper care for the female animal during gestation and parturition.
2. Discuss the proper arrangements for the place of calving, farrowing, foaling, and lambing.
3. Assist in parturition.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Following a demonstration, have students identify the approaching signs for parturition on designated animal.
2. Discuss and participate in assisting in parturition on designated animal.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Pregnant cow, sow, mare, and ewe.
2. Animal science films on animals during gestation.
3. Experimental farm, working dairy, feedlot, farms, and ranches, and textbooks.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.

3.2 **TASK:** Recognizes problems during birth.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a situation where a pregnant cow has labored for sometime with little progress or is laboring rather infrequently,

EVALUATION: assist herdsman or veterinarian in the calving presentation.

STANDARD: During assistance all actions must be in accordance with instructions and no harm should be done to the cow or newborn calf.

STUDENT LEARNING EXPERIENCES:

1. Discuss the symptoms of problems a pregnant cow might have during the calving presentation.
2. Discuss the procedures used for rendering assistance to a pregnant cow during the calving presentation.
3. Assist the herdsman during the calving presentation.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. View presentations of livestock care during gestation, parturition, and lactation.
2. Discuss the care of the newborn calf, and other types of newborn livestock.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Pregnant cow, sow, mare, and ewe.
2. Experimental farm, working dairy, feedlot, farms, and ranches, and textbooks.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.

3.3 **TASK:** Assists newborn to nurse.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a situation whereby a newborn calf is weak and unable to rise and nurse within 30 minutes after parturition,

EVALUATION: assist the new born calf to nurse.

STANDARD: Assist the calf by holding it up to the cow's udder.

STUDENT LEARNING EXPERIENCES:

1. Assemble a file from breeder and livestock magazines of birthing problems.
2. Prepare a chart of possible birthing problems.
3. Prepare a chart of the average size of livestock at birth.
4. Discuss the importance of colostrum for the well-being of the newborn animal.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Show a movie of the birthing process.
2. Invite a veterinarian to address class on birthing difficulties.
3. Invite a local breeder to discuss birthing process.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Movie projector, movie, professional journals, and magazines, textbooks, experimental farms, working dairy, feedlot, farms, and ranches.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

- 3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.
-

3.4 **TASK:** Cares for orphans.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a situation whereby a newborn calf is orphaned,

EVALUATION: care for an orphan calf until the healthy calf can be switched entirely to a suitable dry feed.

STANDARD: The calf should be fed according to one of three systems, or a combination thereof:

1. The whole milk system
2. The combination whole milk-milk replacer system
3. The combination whole milk-calf starter system

STUDENT LEARNING EXPERIENCES:

1. Report on the approximate weaning ages/weights of livestock.
2. Set up the criterion for the care of orphan livestock, use textbooks to assist in assembly of criteria.
3. Discuss the importance of good sanitary practices.
4. Discuss the importance of feeding at regular intervals.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a local livestock breeder to discuss his/her specifications for the care of orphaned livestock.
2. Invite a veterinarian to address class on caring for orphan calves.
3. Show a movie about the care and feeding of orphan livestock.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Movie projector, movie, professional journals, and magazines, textbooks, experimental farms, working dairy, feedlot, farms, and ranches.

RESOURCES:

Ensinger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

- 3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.
-

- 3.5 **TASK:** Determines due dates of pregnant animals.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a list of due dates for various classes of livestock,

EVALUATION: determine due date of a pregnant cow, mare, ewe, and sow.

STANDARD: Determined due dates will be within the average gestation period for each class of animal.

STUDENT LEARNING EXPERIENCES:

1. Assemble a chart of livestock gestation periods.
2. Prepare a report on the development of a livestock animal of choice during gestation period.
3. Discuss the duration of heat, interval of heat, and length of gestation period for each class of animal.
4. Discuss the suggested parturition facilities for each class of animal.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a veterinarian to address the class on the determination of pregnancy in livestock.
2. Start a file, or continue to assemble one, on the difficulties various livestock may encounter during gestation.
3. Discuss the nutritional requirements for each class of animal during gestation.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Testbooks, professional journals and magazines, experimental farm, working dairy, feedlot, farm, and ranch, and calendar.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

- 3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.
-

- 3.6 **TASK:** Determines appropriate ratio of male to female animals to ensure a high pregnancy rate.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; bull, ram, boar, and stallion,

EVALUATION: determine the male to female ratio for a high pregnancy rate.

STANDARD: Considerations should be given to age of animal, method of mating (hand mating or pasture mating), and weight in determining male to female ratio.

STUDENT LEARNING EXPERIENCES:

1. Discuss the proper breeding age and weight of various livestock.
2. Discuss the sire's expected life span as a vigorous and reliable breeder for various livestock.
3. Discuss why it is preferable not to pasture breed horses.
4. Discuss the breed differences when first entering a stallion to stud duty.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a local livestock breeder to discuss his/her specifications for breeding stock.
2. Discuss the differences of hand mating and pasture mating for various livestock.
3. Discuss the advantages and disadvantages of pasture mating.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade journals, breed association publications, and mating ratio chart.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

- 3.0 COMPETENCY/SKILL: Applies approved practices in breeding and care of newborn animals.
-

3.7 TASK: Detects heat.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cow, mare, ewe, and sow,

EVALUATION: identify methods used, or indicators for detection of heat in the female animal.

STANDARD: Cited methods and indicators must be those used throughout the industry and identified by the instructor.

STUDENT LEARNING EXPERIENCES:

1. Discuss indicators of the heat period in the estrus cycle of a cow, mare, ewe, and sow.
2. Discuss the importance of heat detection on the female animal to a stockman.
3. Discuss the following heat detection methods used by cattlemen: Chin-Ball Marker; the KaMar Heat-Mount Detector; and Pen-O-Block.
4. Discuss how a missed heat period prolongs the calving interval and is an ultimate financial loss to the stockman.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Discuss feeding, injecting, or implanting nonpregnant cows with progestagens.
2. Discuss with students the basic principle of superovulation to stimulate extensive follicular development through the use of a hormone preparation, given intramuscularly or subcutaneously, with follicle-stimulating hormone (FSH) activity.
3. Discuss with students the economic value of ova transplantation to a stockman.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, movie projector, movie, trade journals and magazines, experimental farm, dairy, farm, and ranch.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

- 3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.
-

- 3.8 **TASK:** Completes the registration procedures for registering purebred animals.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a set of purebred registration forms and pertinent data,

EVALUATION: completely fill in requested data for designated animal.

STANDARD: The purebred registration form must be legible and accurately filled in and meet the breed registry association's requirements.

STUDENT LEARNING EXPERIENCES:

1. Discuss the various methods of marking or identifying registered animals.
2. Discuss the reasons cited for establishing breed registry associations.
3. Discuss artificial insemination rules relative to cattle and horse registry associations.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Show movies that identify various classes of animals and breed characteristics.
2. Invite a representative from local or state purebred association.
3. Discuss the economics of managing a purebred livestock enterprise versus a mixed breed enterprise.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, movie projector, movies, registry association journals, and publications.
2. Registered dairy farm, and various purebred livestock ranches.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.

3.9 **TASK:** Artificially inseminates livestock.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cow, mare, ewe, and sow,

EVALUATION: artificially inseminate designated livestock.

STANDARD: Cleanliness during all insemination manipulations is essential and is a crucial point for success or failure. This applies to the instruments used, to the hands of the operator, and to the animal. The inseminating tube should be passed through the cervix, stopping at the location where the cervix ends and the uterus begins.

STUDENT LEARNING EXPERIENCES:

1. Discuss the advantages of artificial insemination.
2. Discuss the limitations of artificial insemination.
3. Discuss the collection and handling of semen.
4. Discuss when to breed the various classes of animals.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a dairyman to address the class on the economic advantages of artificial insemination.
2. Visit a dairy for a demonstration of artificial insemination.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry publications, movie projector and film.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

- 3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.
-

3.10 **TASK:** Pregnancy-tests livestock.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animals; cow, mare, ewe, and sow,

EVALUATION: Demonstrate testing for pregnancy on designated animal.

STANDARD: Several methods for pregnancy determination have been developed - use the most common test for each species.

STUDENT LEARNING EXPERIENCES:

1. Discuss pregnancy testing a cow, mare, ewe, and sow.
2. Discuss the advantages of early pregnancy.
3. Assemble a chart of livestock gestation periods, other animals may be included.
4. Prepare a report on the development of a livestock animal of choice during gestation.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a veterinarian to address the class on the determination of pregnancy in livestock.
2. Start a file, or continue to assemble one, on the difficulties various livestock may encounter during gestation.
3. Prepare video tape of pregnancy testing.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry publications, movie camera and film.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.

3.11 **TASK:** Weans animals.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animals; calves, foals, lambs, and pigs,

EVALUATION: demonstrate weaning procedures for designated class of animal.

STANDARD: The separation should be complete and final. In no case should the dam be returned to her offspring. The feed of the dam should be decreased a few days prior to the separation, and should be more bulky for a few days after the removal of the young and until the udder has dried up.

STUDENT LEARNING EXPERIENCES:

1. Discuss the approximate weaning ages/weights of livestock.
2. Set up the criterion to be used to wean animals from a class of livestock.
3. Discuss procedures to alleviate spoiled udders when drying up lactating females.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a local stockman to discuss his/her specifications for weaning animals.
2. Visit a local livestock operation and observe, or allow students, to set up criteria for weaning animals.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry publications, movie projector and film.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.

3.12 **TASK:** Determines when to cull animals.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animals; cattle, horses, sheep, and swine,

EVALUATION: demonstrate culling procedures for designated class of animal.

STANDARD: Recognize that breeding animals are selected at a young age, and mistakes in selection will be made. Demonstrate an awareness for assessing livestock potential by setting up specifications for culling in a written report.

STUDENT LEARNING EXPERIENCES:

1. Set up the criterion to be used to cull animals from a class of livestock.
2. Discuss the approximate repeatability of productive traits in livestock.
3. Discuss the economics of raising the female to breeding age.
4. Discuss selection standards for heifers in a dairy herd.
5. Discuss the importance of maintaining production records on each animal.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a representative from local or state purebred association to address the class.
2. Invite a local stockman to discuss his/her specifications for culling animals.
3. Visit a small herd and observe, or allow students to set up criteria for culling animals from herd.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

3.0 COMPETENCY/SKILL: Applies approved practices in breeding and care of newborn animals.

3.13 TASK: Uses performance and pedigree information in selecting herd replacements.

PERFORMANCE OBJECTIVE:

See Tasks 3.8 and 3.12

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

3.0 COMPETENCY/SKILL: Applies approved practices in breeding and care of newborn animals.

3.14 TASK: Determines best buy per ampule of semen.

PERFORMANCE OBJECTIVE:

See Task 3.9

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

3.0 COMPETENCY/SKILL: Applies approved practices in breeding and care of newborn animals.

3.15 TASK: Determines the most effective herd replacement rate to optimize genetic improvement and understand factors influencing it.

PERFORMANCE OBJECTIVE:

See Task 3.12

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

3.0 COMPETENCY/SKILL: Applies approved practices in breeding and care of newborn animals.

3.16 TASK: Prepares livestock and facilities for parturition.

PERFORMANCE OBJECTIVE:

See Tasks 3.1, 3.2, and 3.3

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

3.0 COMPETENCY/SKILL: Applies approved practices in breeding and care of newborn animals.

3.17 TASK: Flushes animals before breeding to improve conception rate.

PERFORMANCE OBJECTIVE:

See Tasks 3.1, 3.5, 3.7, and 3.9

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.

3.18 **TASK:** Knows the process of fetal development.

PERFORMANCE OBJECTIVE:

See Tasks 3.1, 3.5, and 3.10

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.

3.19 **TASK:** Identifies the anatomy of the male and female reproductive tract and know the function of the tract.

PERFORMANCE OBJECTIVE:

See Tasks 3.1, 3.2, 3.3, 3.5, 3.6, 3.9, and 3.10

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.

3.20 **TASK:** Decides whether to use artificial insemination or direct service.

PERFORMANCE OBJECTIVE:

See Tasks 3.5, 3.6, 3.7, and 3.9

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.

3.21 **TASK:** Determines age and weight at which animals can breed or be bred.

PERFORMANCE OBJECTIVE:

See Task 3.6

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

3.0 COMPETENCY/SKILL: Applies approved practices in breeding and care of newborn animals.

3.22 TASK: Determines causes of infertility.

PERFORMANCE OBJECTIVE:

See Tasks 3.5, 3.6, 3.7, 3.9, and 3.10

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

3.0 **COMPETENCY/SKILL:** Applies approved practices in breeding and care of newborn animals.

3.23 **TASK:** Knows the reproduction cycles and pregnancy periods of various types of livestock.

PERFORMANCE OBJECTIVE:

See Tasks 3.5, 3.6, 3.7, 3.9, and 3.10

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

4.0 COMPETENCY/SKILL: Applies approved practices in livestock health to control diseases and parasites.

4.1 TASK: Administers medication orally, by injection, and through feed and water.

PERFORMANCE OBJECTIVE:

See Task 4.14.

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

- 4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health to control diseases and parasites.
-

- 4.2 **TASK:** Applies medication to cuts and bruises.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given an injured animal, or a hypothetical situation,

EVALUATION: apply proper medication for specific, or specified injury.

STANDARD: The injured animal will be properly medicated in accordance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. List the isolation pen requirements for various animals.
2. Discuss the economic and veterinary reasons to isolate injured or sick animals.
3. Discuss various methods of treatment for different types of injuries to animals.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a veterinarian to the class to discuss the proper handling of injured, sick or weak animals.
2. List reasons for isolating animals.
3. Discuss the economic impact of animal death to herd/ranch/farm.
4. Show a movie about proper methods of treatment for different types of injuries to animals.
5. Visit a local livestock operation and have students observe and discuss methods of treatment for injured or sick animals with the herdsman.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals.
2. Necessary veterinary medical supplies, and designated livestock.

RESOURCES:

Cole, H. H. and Magnar Ronning, Ed. ANIMAL AGRICULTURE: THE BIOLOGY OF DOMESTIC ANIMALS AND THEIR USE BY MAN. W. H. Freeman Publishing Company, New York, NY. 2ND ED. 1980.

- 4.0 COMPETENCY/SKILL: Applies approved practices in livestock health to control diseases and parasites.
-

- 4.3 TASK: Cleans and disinfects pens and housing.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given dirty stock pens and/or housing, cleaning solvents, disinfectants, materials and equipment,

EVALUATION: clean and disinfect designated stock pens and/or housing.

STANDARD: Disinfection, must in all cases, be preceded by a very thorough cleaning. All work must be in accordance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Discuss the economics of maintaining clean stock pens and housing.
2. Discuss the importance of having a planned sanitation program.
3. Discuss approved practices in sanitizing premises.
4. Discuss methods of disinfection and sterilization.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a veterinarian to the class to discuss the need for establishing and maintaining a well planned livestock sanitation program.
2. List the advantages and disadvantages of using various chemical disinfectants.
3. Show a movie about proper livestock sanitation methods and practices.
4. Visit a local livestock operation and have students observe and discuss methods and practices for proper sanitation.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, movie projector and movie.
2. Cleaning solvents, disinfectants, materials, equipment, and stock pens and/or housing.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc. Danville, IL. 6TH ED. 1983.

4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health to control diseases and parasites.

4.4 **TASK:** Dips, drenches and dusts livestock.

PERFORMANCE OBJECTIVE:

See Task 4.6

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

4.0 COMPETENCY/SKILL: Applies approved practices in livestock health to control diseases and parasites.

4.5 TASK: Pens sick, weak, or injured animals separately.

PERFORMANCE OBJECTIVE:

See Task 4.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

4.0 COMPETENCY/SKILL: Applies approved practices in livestock health to control diseases and parasites.

4.6 TASK: Plans a parasite control program.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cattle, sheep, swine, or horse, number of animals, available handling facilities, time of season, the target pest, and cost,

EVALUATION: establish a parasite control program for designated animal species and target pest.

STANDARD: The parasite control program must meet the Environmental Protection Agencies codes for hazardous materials, contain common methods of insecticide application, and be in accordance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Discuss the importance of following EPA codes, manufacturer's instructions, and safe handling of insecticides (hazardous materials).
2. Discuss the economics of parasite control programs for various classes of livestock.
3. Discuss selecting insecticides, storing insecticides, disposing of empty containers and unused insecticides, applying insecticides, emergency situations involving insecticides, and animal withdrawal procedures.
4. Discuss insecticide application methods - spraying, dipping, back rubbers, pour-on, and feed additives.
5. Discuss common diseases and parasites prevention.
6. Identify symptoms of common diseases and parasites.
7. Interpret labels on medication and insecticides manufactured for livestock.
8. Discuss the diversity of environments and management practices in which they occur, the varying restrictions on the use from area to area, and that registered uses of insecticides change from time to time.
9. Discuss how a stockman might determine when to call a veterinarian.
10. Discuss internal parasite controls using wormers and pills.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a veterinarian to the class to discuss the need for establishing and maintaining a well planned parasite control program.
2. List the advantages and disadvantages of using insecticides.
3. Visit a local livestock operation and have students observe and discuss methods and practices for parasite control.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, and manufacturer's brochures.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

- 4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health to control diseases and parasites.
-

4.7 **TASK:** Docks, castrates, brands, dehorn and trim feet.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cattle, sheep, swine, horse, necessary tools and equipment,

EVALUATION: using proper methods, dock, castrate, brand, dehorn and trim feet on designated animal.

STANDARD: The livestock management practices must be those methods which are approved by the U. S. Department of Agriculture, and are in accordance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Discuss the economics of livestock management.
2. Discuss docking methods - knife or shears, hot iron (pincers or chisels), and elastrator, recommended age, and sanitation used in the management of sheep.
3. Discuss the different methods of castration for cattle, sheep, swine, and horses.
4. Discuss the pertinent facts relative to branding cattle - time, location on animal, and preparation.
5. Discuss branding cattle with the hot iron, freeze marking, and branding fluids.
6. Discuss the characteristics of a good brand, earmarks, horn brands, tattoos and laser brands.
7. Discuss dehorning methods - chemical (dehorning pastes or sticks), saws and clippers, hot iron, dehorning spoon and dehorning tube, and elastrator, recommended age, and sanitation used in the management of cattle.
8. Discuss the proper stance and correcting common faults associated with proper care of a horse's feet.
9. Discuss common foot faults - splayfoot, pigeon-toed, quarter crack, cocked ankles, contracted heels and how to correct them.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a veterinarian to the class to discuss the need for establishing and maintaining a well planned livestock management program.
2. Visit a local livestock operation and have students observe and discuss methods and practices for proper livestock management.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, knives, shears, hot iron, and elastrator.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health to control diseases and parasites.

4.8 **TASK:** Marks, notches, tags, or tattoos ears.

PERFORMANCE OBJECTIVE:

See Task 4.7

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health to control diseases and parasites.

4.9 **TASK:** Identifies symptoms of common diseases and parasites.

PERFORMANCE OBJECTIVE:

See Tasks 4.6 and 4.14

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health to control diseases and parasites.

4.10 **TASK:** Interprets labels and medications.

PERFORMANCE OBJECTIVE:

See Tasks 4.6 and 4.14

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health to control diseases and parasites.

4.11 **TASK:** Prevents common diseases and parasites.

PERFORMANCE OBJECTIVE:

See Tasks 4.6 and 4.14

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health
to control diseases and parasites.

4.12 **TASK:** Worms and pills.

PERFORMANCE OBJECTIVE:

See Task 4.6

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

4.0 COMPETENCY/SKILL: Applies approved practices in livestock health to control diseases and parasites.

4.13 TASK: Stores pesticides, vaccines, and medications.

PERFORMANCE OBJECTIVE:

See Tasks 4.6 and 4.14

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health to control diseases and parasites.

4.14 **TASK:** Develops a vaccination program.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cattle, sheep, swine, or horse, number of animals, available handling facilities, time of season, the target disease, and cost,

EVALUATION: establish a vaccination program for designated animal species and target disease.

STANDARD: The vaccination program must consider herd or flock size, the location of the farm, the disease situation on the farm and in the immediate area.

STUDENT LEARNING EXPERIENCES:

1. Discuss the importance of following the manufacturer's instructions and safe handling of vaccines and serum.
2. Discuss the economics of an effective vaccination program for various classes of livestock.
3. Discuss and determine amounts of medication, materials, or vaccinations needed in specific situations.
4. Discuss types of vaccinations and injections - subcutaneous method, intradermal method, intramuscular method, intravenous method, and intraperitoneal method.
5. Discuss the proper use, care, and sanitation of syringes used in a vaccination program.
6. Discuss how a stockman might determine when to call a veterinarian.
7. Discuss how to take an animal's temperature, and what normal temperature ranges are for various classes of animals.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a veterinarian to the class to discuss the need for establishing and maintaining a well planned vaccination program.
2. Visit a local livestock operation and have students observe and discuss methods and practices used in the vaccination program.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, manufacturer's brochures, and veterinarian medicine publications and books.

RESOURCES:

Enslinger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health to control diseases and parasites.

4.15 **TASK:** Determines amounts of medication or materials needed in specific situations.

PERFORMANCE OBJECTIVE:

See Task 4.14

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

4.0 COMPETENCY/SKILL: Applies approved practices in livestock health to control diseases and parasites.

4.16 TASK: Identifies and corrects sanitation problems.

PERFORMANCE OBJECTIVE:

See Task 4.3

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health to control diseases and parasites.

4.17 **TASK:** Takes temperature.

PERFORMANCE OBJECTIVE:

See Task 4.14

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health to control diseases and parasites.

4.18 **TASK:** Calculates the cost of various health programs.

PERFORMANCE OBJECTIVE:

See Tasks 4.6 and 4.14

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

- 4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health to control diseases and parasites.
-

4.19 **TASK:** Isolates newly purchased animals.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cattle, sheep, swine, or horse, number of animals, available handling facilities, time or season,

EVALUATION: isolate newly purchased animals.

STANDARD: The pasture, lot, or stall provided must be clean, dry and comfortable. Give the livestock clean fresh water, a palatable ration of roughage and concentrate, satisfy mineral hunger. Observe new livestock at least twice daily. Remove and treat sick animals.

STUDENT LEARNING EXPERIENCES:

1. Discuss the economics of providing newly arrived livestock with rest, fresh water, good feed, proper medication and TLC (tender loving care).
2. Discuss the merits of processing livestock upon arrival versus point of origin, or delayed processing.
3. Discuss the most critical period for feeder cattle in the feedlot.
4. Discuss the factors that influence the difficulties experienced in starting new cattle on feed.
5. Establish a schedule for getting cattle on feed.
6. Discuss the removal or disposal of dead animals - burning, burying, or dispose the carcass by rendering.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a stockman to class to discuss the need for establishing and maintaining an isolation program for newly arrived livestock.
2. Discuss the economic impact of animal death to herd, ranch, or farm.
3. Visit a local livestock operation and have students observe and discuss methods and practices for isolating newly arrived livestock.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, and veterinarian medicine publications and books.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health to control diseases and parasites.

4.20 **TASK:** Removes or buries dead animals.

PERFORMANCE OBJECTIVE:

See Task 4.19

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

4.0 **COMPETENCY/SKILL:** Applies approved practices in livestock health
to control diseases and parasites.

4.21 **TASK:** Determines when to call a veterinarian.

PERFORMANCE OBJECTIVE:

See Tasks 4.6 and 4.14

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

- 5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.
-

5.1 **TASK:** Determines proper amounts to feed various types of livestock.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cattle, sheep, swine, or horse, age, size, the kind and degree of activity, climatic conditions, system of management, the health, condition, and temperament of the animal,

EVALUATION: determine proper amounts to feed for designated animal.

STANDARD: The amount of feed must contain nutritive properties of cereal grains, animal protein, supplements, plant protein supplements, roughages and an array of by-product feeds may be utilized. The amount of feed must be in accordance with recommended balanced rations for type, size, and age of animal, and instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Discuss and calculate ration formulation illustrating these four methods: Pearson square; trial and error; net energy; and if available, the computer method.
2. Discuss when and what supplemental feed must be fed.
3. Discuss the value of distributing salt and mineral blocks throughout the grazing area.
4. Identify feeds and interpret feed tags, labels, and feed analysis reports.
5. Determine and discuss relative nutrient value of feedstuffs.
6. Discuss, develop and balance rations and calculate cost.
7. Determine the nutrient requirements of different ages, sex, kind and weight for class of animal; cattle, sheep, swine, and horse.
8. Calculate nutrient cost per unit.
9. Discuss and formulate a least cost or least time ration.
10. Discuss and calculate feed efficiency.
11. Discuss and determine substitution rates and substitute feedstuffs in ratios.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a feed sales representative to address class on available feed types and supplements.
2. Develop files on livestock type, feed requirements and supplements available.
3. Visit a local livestock operation and have students observe and discuss methods and practices for feeding livestock.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade journals, and feedstuff samples.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

- 5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.
-

5.2 **TASK:** Determines water requirement for livestock.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cattle, sheep, swine, or horse, age, size, the kind and degree of activity, climatic conditions, system of management, the health, condition, and temperament of the animal,

EVALUATION: determine water requirement for designated animal.

STANDARD: The amount of water available to livestock must meet daily requirements for class of animal and must be in accordance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Discuss the importance of water as a vital nutrient.
2. Discuss the water requirements for a lactating cow.
3. Discuss the advantages of providing livestock with drinking cups.
4. Discuss the importance of providing abundant clean water.
5. Discuss the effects of water that has excessive nitrates, alkalinity or salinity counts on livestock.
6. Determine by class of animal; cattle, sheep, swine, and horse - the space requirements for water troughs and watering cups.
7. Discuss the importance of maintaining clean and fresh filled waterers.
8. Discuss satisfactory water temperature range in winter and summer for class of animal.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Design and draw plans for strategic placement of water facilities in pastures, stock pens, stalls, and confinement buildings.
2. Visit a local livestock operation and have students observe and discuss methods and practices for providing livestock water.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, drafting equipment, and calculators.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

- 5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.
-

5.3 **TASK:** Identifies spoiled feed.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a sample of various spoiled feedstuffs,

EVALUATION: identify spoiled feed.

STANDARD: Spoiled, moldy, or poisonous plants and poisonous feeds must be identified correctly and in accordance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Discuss and identify plants that cause prussic acid, or hydrocyanic acid poisoning.
2. Discuss the type of seeds and grasses that are sometimes attacked by ergot fungus.
3. Discuss and identify small grains that are affected by the scabbed grain fungus.
4. Discuss smut on corn and other grain.
5. Discuss the hazards of feeding spoiled or moldy feed to livestock.
6. Discuss nitrate poisoning and the method used to identify poisonous quantities.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a veterinarian to address class on the hazards of spoiled or moldy feed, and botulism.
2. Visit a local livestock operation and have students observe and discuss the feeding operation, and spoilage control.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, and feedstuff samples.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.4 **TASK:** Determines when and what supplemental feed must be fed.

PERFORMANCE OBJECTIVE:

See Task 5.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 COMPETENCY/SKILL: Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.5 TASK: Distributes salt and mineral blocks.

PERFORMANCE OBJECTIVE:

See Task 5.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

- 5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.
-

5.6 **TASK:** Feeds grazing livestock.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cattle, sheep, swine, or horse, age, the quality of the pasture, the price of concentrates, the rapidity of gains desired, and the market conditions,

EVALUATION: design a plan to utilize pastures for finishing livestock.

STANDARD: Any of the following systems may be employed:

1. Finishing on pastures alone with no concentrates being fed.
2. Limited grain allowance during the entire pasture period.
3. Full feeding during the entire pasture period.
4. Full or limited grain feeding on pasture following the short period of peak pasture growth.
5. Short feeding (60 to 120 days) in the feedlot at the end of the pasture period.

STUDENT LEARNING EXPERIENCES:

1. Discuss moderate winter feeding for maximum utilization of pasture.
2. Discuss "washy" pastures, and when is the best time to turn cattle to pasture.
3. Discuss the time for starting grain fed cattle on pastures and any sudden changes to be avoided.
4. Discuss the addition of grain supplements for cattle on pasture and the effects on daily gains and earlier marketing.
5. Discuss the carrying capacity of pastures and the use of grain supplents.
6. Discuss self-feeding versus hand feeding on pasture, species of grasses or legumes and the economics of grain feeding on pasture.
7. Discuss practices that are helpful in reducing the bloat hazard.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Develop files on livestock type, feed requirements and supplements available.
2. Visit a local livestock operation and have students observe and discuss methods and practices for feed grazing livestock.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, and nutrient requirement charts.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.7 **TASK:** Identifies feeds.

PERFORMANCE OBJECTIVE:

See Task 5.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.8 **TASK:** Interprets feed tags, labels, and feed analysis reports.

PERFORMANCE OBJECTIVE:

See Task 5.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.9 **TASK:** Determines relative nutrient value of feedstuffs.

PERFORMANCE OBJECTIVE:

See Task 5.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

- 5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.
-

5.10 **TASK:** Determines equipment needed to feed livestock.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cattle, sheep, swine, or horse, age, size, the kind and degree of activity, climatic conditions, system of management, the health, condition, and temperament of the animal,

EVALUATION: decide on the specific kind of livestock and the size of the enterprise, sketch a plan of the buildings and equipment required to meet the needs in the most efficient and economical manner.

STANDARD: Primary considerations should be given to: The flow of all materials; maximum automation and minimum labor; and expense. Plans should include provisions for: Feed delivery; sanitary water supply; bedding; manure removal; and marketing animals.

STUDENT LEARNING EXPERIENCES:

1. Determine proper feeding and watering space requirements.
2. Demonstrate feed handling and harvesting equipment safely.
3. Discuss space requirements of buildings and equipment for beef cattle, dairy cattle, sheep, swine, and horses.
4. Discuss storage space requirements for feed and bedding.
5. Discuss facility design for drylotting beef cows, finishing cattle, and open pen feedlot.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a livestock equipment sales representative to address class on feed equipment design.
2. Visit a local livestock operation and have students observe and discuss building and equipment design and layout.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, and equipment manufacturer's brochures.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

5.0 COMPETENCY/SKILL: Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.11 TASK: Cleans and fills waterers.

PERFORMANCE OBJECTIVE:

See Task 5.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.12 **TASK:** Calculates feed efficiency.

PERFORMANCE OBJECTIVE:

See Task 5.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 COMPETENCY/SKILL: Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.13 TASK: Develops and balances rations and calculates cost.

PERFORMANCE OBJECTIVE:

See Task 5.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 COMPETENCY/SKILL: Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.14 TASK: Determines the nutrient requirements of different ages, sex, kind, and weight of livestock.

PERFORMANCE OBJECTIVE:

See Task 5.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 COMPETENCY/SKILL: Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.15 TASK: Determines proper feeding and watering space requirements.

PERFORMANCE OBJECTIVE:

See Task 5.10

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

- 5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.
-

5.16 **TASK:** Determines when to change composition of rations based on poor performance or cost.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cattle, sheep, swine, or horse, the supply of homegrown feeds, the availability and price of purchased feeds, age of animals, the health and condition of the animals, length of the grazing season, and net returns,

EVALUATION: determine when to change composition of rations based on poor performance or cost for designated class of animal.

STANDARD: Feeds of similar nutritive properties should be interchanged as price relationships warrant.

STUDENT LEARNING EXPERIENCES:

1. Determine the correct feed preparation and feed form for best performance at minimum cost.
2. Interpret feed standard tables.
3. Identify and make use of the factors affecting the value and palatability of feeds.
4. Discuss the upper and lower limits of certain feeds to include in a ration.
5. Formulate a balanced ration by the Pearson square or other methods.
6. Interpret results of feeding experiments.
7. Discuss state and federal feed laws.
8. Recognize and discuss problems associated with over or under feeding.
9. Discuss feed substitutions when considering a change of rations.
10. Discuss the options of home mixed feeds versus commercial feeds.

11. Discuss and complete forms necessary in mixing and handling formulated feeds.
12. Discuss the advantages associated with implant growth stimulants.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a feed sales representative to address class on available feed types and supplements.
2. Develop files on livestock type, feed requirements and supplements available.
3. Visit a local livestock operation and have students observe and discuss methods and practices for feeding livestock.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, feedstuffs, manufacturer's brochures and feedstuff samples.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.17 **TASK:** Determines the correct feed preparation and feed form for best performance at minimum cost.

PERFORMANCE OBJECTIVE:

See Task 5.16

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.18 **TASK:** Interprets feed standard tables.

PERFORMANCE OBJECTIVE:

See Task 5.16

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 COMPETENCY/SKILL: Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.19 TASK: Identifies and makes use of the factors affecting the value and palatability of feeds.

PERFORMANCE OBJECTIVE:

See Task 5.16

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.20 **TASK:** Knows the upper and lower limits of certain feeds to include in a ration.

PERFORMANCE OBJECTIVE:

See Task 5.16

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.21 **TASK:** Formulates a balanced ration by the Pearson square or other methods.

PERFORMANCE OBJECTIVE:

See Tasks 5.1 and 5.16

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 COMPETENCY/SKILL: Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.22 TASK: Calculates nutrient cost per unit.

PERFORMANCE OBJECTIVE:

See Task 5.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.23 **TASK:** Interprets results of feeding experiments.

PERFORMANCE OBJECTIVE:

 See Task 5.16

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 COMPETENCY/SKILL: Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.24 TASK: Observes and handles feed and equipment safely.

PERFORMANCE OBJECTIVE:

See Task 5.10

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.25 **TASK:** Understands state and federal feed laws.

PERFORMANCE OBJECTIVE:

 See Task 5.16

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.26 **TASK:** Formulates a least cost or least time ration.

PERFORMANCE OBJECTIVE:

See Task 5.21

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.27 **TASK:** Determines substitution rates and substitute feedstuffs in ratios.

PERFORMANCE OBJECTIVE:

See Task 5.21

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 COMPETENCY/SKILL: Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.28 TASK: Determines different handling properties of grains and other feeds.

PERFORMANCE OBJECTIVE:

See Task 5.10

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 COMPETENCY/SKILL: Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.29 TASK: Identifies storage factors to maintain quality of feeds and prevent contamination of harmful substances.

PERFORMANCE OBJECTIVE:

See Task 5.10

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.30 **TASK:** Selects, operates, cleans and services grinding and mixing equipment.

PERFORMANCE OBJECTIVE:

See Task 5.10

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.31 **TASK:** Estimates amounts of materials by volume.

PERFORMANCE OBJECTIVE:

See Task 5.10

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.32 **TASK:** Completes forms necessary in mixing and handling formulated feeds.

PERFORMANCE OBJECTIVE:

See Task 5.16

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.33 **TASK:** Recognizes problems associated with over or under feeding.

PERFORMANCE OBJECTIVE:

See Task 5.16

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

5.0 **COMPETENCY/SKILL:** Determines the nutrient requirements of various types of livestock and prepares and feeds livestock utilizing approved practices to maintain herd health and profitability.

5.34 **TASK:** Implants growth stimulants.

PERFORMANCE OBJECTIVE:

See Task 5.16

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

6.0 COMPETENCY/SKILL: Constructs and maintains facilities and equipment.

6.1 TASK: Constructs fences.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a classroom assignment to fence various areas located on a farm/ranch,

EVALUATION: plan, design, and select materials to construct fences.

STANDARD: Plans and design must maintain farm boundaries, make livestock operations possible, reduce losses to both animals and crops, increase land values, promote better relationships between neighbors, lessen accidents from animals getting on roads, add attractiveness and distinctiveness of the premises, and be well constructed.

STUDENT LEARNING EXPERIENCES:

1. Discuss how to select wire; styles of woven wire, mesh, weight of wire, styles of barbed wire, standard size rolls or spools, and wire coating - for designated class of animal.
2. Discuss the advantages and disadvantages of wood, metal, and concrete fence posts.
3. Explain how to measure and figure a fencing job.
4. Explain how to erect a woven wire fence.
5. Explain how to erect a barbed wire fence.
6. Discuss how to stretch a wire fence.
7. Discuss and explain how to construct a suspension fence, an electric fence and safety factors to consider during and after construction.
8. Discuss procedures to use when constructing dog-proof fences for sheep.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Visit a local co-op to discuss with the sales representative various fencing materials utilized by local farmers/ranchers.
2. Participate in fence construction project in the community.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, manufacturer's brochures, samples of fencing materials and tools.

RESOURCES:

Eneminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

6.0 **COMPETENCY/SKILL:** Constructs and maintains facilities and equipment.

6.2 **TASK:** Joins steel tubing and pipe, copper tubing and pipe, and plastic tubing and pipe, using approved practices.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a set of plumbing tools and equipment,

EVALUATION: join specified tubing and pipe on designated class project.

STANDARD: All work must meet recognized standards and be in accordance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Identify the types of copper tubing commercially available.
2. Demonstrate how to select pipe and pipe fittings for a job.
3. Demonstrate how to accurately measure pipe for a particular installation.
4. Demonstrate how to skillfully use tools for cutting, threading, and assembling pipe and pipe fittings.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Following a demonstration, have students join copper tubing by soldered fittings.
2. Following a demonstration, have students join copper tubing by flared fittings.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, shop manuals.
2. Steel tubing and pipe, copper tubing and pipe, plastic tubing and pipe, steel pipe cutter, plastic pipe cutter, tubing cutter, pipe vise, propane torch kit, abrasive cloth, solder, non-corrosive flux, teflon tape, joint compound, glue, 8" mill file, extension rule, 1/2 inch pipe die and stock, cutting oil, pipe reamer and brace, pipe wrench, and adjustable jaw wrench.

RESOURCES:

"Resource Unit on Construction and Maintenance Skills for Core Curriculum." Res. Unit 11. Agricultural Education Section, Department of Vocational Education, Phoenix, and Department of Agricultural Education, The University of Arizona, Tucson, AZ. Classic Text. 1970.

6.0 COMPETENCY/SKILL: Constructs and maintains facilities and equipment.

6.3 TASK: Mixes, finishes, and places concrete.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given cement, aggregate, water, shovels, and a cement mixer,

EVALUATION: mix, place, and finish concrete on designated class project.

STANDARD: The concrete must be thoroughly mixed in the correct proportions, placed and finished in accordance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Discuss why it is important for the water used in mixing concrete to be clean and proportioned to the correct part of the mixture formula.
2. Discuss the use of sand and gravel, or aggregate in mixing concrete batches.
3. Determine the amount of concrete needed for designated project, find the volume in cubic feet of the area to be concreted using the following formula:

Width, Ft. x Length, Ft. x Thickness, Ft. = Cubic Yards.

Then:

Cubic Yards x 27 = Cubic Feet.

4. Explain how to make quality concrete.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a ready-mixed concrete sales representative to address the class on the economics of utilizing concrete and the versatility of its use.
2. Participate in a class construction project utilizing concrete.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, and trade/industry journals.
2. Cement, aggregate, shovels, water source and mixer.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

6.0 **COMPETENCY/SKILL:** Constructs and maintains facilities and equipment.

6.4 **TASK:** Uses woodworking and metalworking skills in construction and repair of buildings and equipment.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a complete set of carpenter tools,

EVALUATION: demonstrate woodworking skills on designated class project.

STANDARD: All work must meet recognized standards and be in accordance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Identify by name, tools for layout and squaring.
2. Demonstrate how to square a board and make a square cut to specifications with a cross-cut hand saw.
3. Demonstrate how to safely use the 1/4 inch electric hand drill.
4. Identify commonly used nails.
5. Identify common yard lumber by type and grades of lumber.
6. Demonstrate how to join wood with screws.
7. Identify the parts of a wood auger bit.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Demonstrate how to calculate the cost of a given quantity of lumber and have students calculate similar problems.
2. Use power tools to construct a small project using wood or a wood product.
3. Following demonstration, have students select and apply wood glue on designated project.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, carpenter tools, wood auger kit, portable electric saw, hand brace and bit, nails, wood glue, screws, paint and brush, and personal safety equipment.

RESOURCES:

"Resource Unit on Construction and Maintenance Skills for Core Curriculum." Res. Unit 11. Agricultural Education Section, Department of Vocational Education, Phoenix, and Department of Agricultural Education, The University of Arizona, Tucson, AZ. Classic Text. 1970.

6.0 COMPETENCY/SKILL: Constructs and maintains facilities and equipment.

6.4.1 TASK: Uses woodworking and metalworking skills in construction and repair of buildings and equipment.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a complete set of metalworking tools,

EVALUATION: demonstrate metalworking skills on designated class project.

STANDARD: All work must meet recognized standards and be in accordance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Identify the role of abrasives for construction and maintenance.
2. Demonstrate how to safely operate grinding wheels.
3. Identify the types of hand hack saw blades.
4. Demonstrate how to make a square cut with a hand hack saw.
5. Demonstrate safely how to operate a drill press.
6. Identify the shape and form of American Standard Threads.
7. Identify the common types of threaded fasteners.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Following a demonstration, have students use a hand file skillfully.
2. Following a demonstration, have students successfully sharpen a twist drill.
3. Identify the parts of a screw plate.
4. Cut internal and external threads for a desired fit.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, abrasives, grinding wheels, threaded fasteners, hand hack saw and blades, screw plates, and hand files.

RESOURCES:

"Resource Unit on Construction and Maintenance Skills for Core Curriculum." Res. Unit 11. Agricultural Education Section, Department of Vocational Education, Phoenix, and Department of Agricultural Education, The University of Arizona, Tucson, AZ. Classic Text. 1970.

6.0 **COMPETENCY/SKILL:** Constructs and maintains facilities and equipment.

6.5 **TASK:** Wires 115 and 220 volt circuits.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a project that requires installation of 115 and 220 volt circuits,

EVALUATION: Wire 115 and 220 volt circuits in designated areas.

STANDARD: Safety precautions will be observed, installation will be in accordance with plans/schematics and instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Discuss the uses of 115 and 220 volt circuits.
2. Practice wiring, non-live, electric circuits.
3. Discuss ungrounded, grounding conductors, and grounded neutral conductors and their associated wiring color code.
4. Discuss the installation of ground neutral conductors and the National Electric Code of the United States requirements.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Following a demonstration, have students practice wiring procedures using "dead" wire.
2. Invite a professional electrician to address the class on safety precautions and procedures to use when working with electricity.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry books, technical books.
2. Insulated tools and personal safety equipment, wiring and necessary supplies.

RESOURCES:

FUNDAMENTALS OF MACHINE OPERATION: AGRICULTURAL SAFETY. John Deere and Company, Moline, IL. 2ND ED. 1983.

6.0	COMPETENCY/SKILL:	Constructs and maintains facilities and equipment.
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6.6 TASK: Installs and services electrical motors.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a new electrical motor, tools, and personal safety equipment,

EVALUATION: install designated electrical motor.

STANDARD: Installation of electrical motor will be in accordance with manufacturer's specifications. All safety precautions will be observed.

STUDENT LEARNING EXPERIENCES:

1. Describe the components of an electrical motor.
2. Disassemble and reassemble a small electrical motor.
3. Discuss the difference A.C. and D.C. electric motors and their uses.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Following a demonstration, have students install designated electric motor.
2. Invite a professional electrician to address the class on safety precautions and procedures to use when working with electricity.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry books, technical books, insulated tools and personal safety equipment, and electric motor.

RESOURCES:

FUNDAMENTALS OF MACHINE OPERATION: PREVENTIVE MAINTENANCE. John Deere and Company, Moline, IL. 1984.

6.0 **COMPETENCY/SKILL:** Constructs and maintains facilities and
equipment.

6.7 **TASK:** Develops working drawings.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a drawing project, drawing board, drawing paper, tee square, 45 degree triangle, ruby red eraser, 2H and 2H pencils, architects scale, and drafting tape,

EVALUATION: develop working drawings of designated project.

STANDARD: Working drawings dimensions should be such that there is no possible confusion as to the detail it is to project.

STUDENT LEARNING EXPERIENCES:

1. Discuss the importance of having a working knowledge of a drawing.
2. Identify the parts of a typical orthographic drawing.
3. Identify what constitutes an isometric drawing.
4. Demonstrate how to lay out dimensions to scale with an architect scale.
5. Describe the dimensions of drawings.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Use the alphabet of lines to describe an object by drawing.
2. Read a working drawing from an orthographic projection.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, drawing board, drawing paper, tee square, 45 degree triangle, ruby red eraser, 2H and 3H pencils, architects scale, and drafting tape.

RESOURCES:

"Resource Unit on Construction and Maintenance Skills for Core Curriculum." Res. Unit 11. Agricultural Education Section, Department of Vocational Education, Phoenix, and Department of Agricultural Education, The University of Arizona, Tucson, AZ. Classic Text. 1970.

6.0 COMPETENCY/SKILL: Constructs and maintains facilities and equipment.

6.8 **TASK:** Sets up, balances, and adjusts livestock scales.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a set of scales, necessary tools and equipment,

EVALUATION: set up, balance, and adjust livestock scales at designated site.

STANDARD: Scales must be properly set up, balanced, adjusted and located for easy access. Weight adjustment must be in accordance with manufacturer's specifications.

STUDENT LEARNING EXPERIENCES:

1. Discuss the different types of livestock scales needed for class of animal production.
2. Determine and discuss site selection for placement of scales for optimum utilization.
3. Adjust a scale out of balance.
4. Draw a schematic of the livestock scales.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Following a demonstration, have students adjust designated livestock scales.
2. Invite a stockman to address the class on the economic importance of having properly balanced scales on the farm/ranch.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, industry/trade journals, manufacturers brochures, and scales.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate
Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

6.0 COMPETENCY/SKILL: Constructs and maintains facilities and equipment.

6.9 TASK: Safely adjusts and operates gas and arc welding equipment.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 33.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

6.0	COMPETENCY/SKILL:	Constructs and maintains facilities and equipment.
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6.10 **TASK:** Operates equipment safely.

PERFORMANCE OBJECTIVE:

See Task 8.4 and Agriculture Power and Machinery Competencies 1.0, 2.0, 33.0, and 34.0.

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

7.0 COMPETENCY/SKILL: Practices personal and human relations skills.

7.1 TASK: Makes decisions when necessary.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a situation with several available alternative solutions,

EVALUATION: select the most suitable solution in light of the particular situation.

STANDARD: The selected outcome should include an implicit favorite model of decision-making.

STUDENT LEARNING EXPERIENCES:

1. Set goal.
2. Identify implicit favorite.
3. Compare and rank implicitly rejected alternatives.
4. Identify confirmation candidate.
5. Establish decision rule or criterion.
6. Announce decision.
7. Act.
8. Discuss process you used and why selected alternatives.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Discuss with students on the various models of the decision-making process. (Econologic Model, Bounded Rationality Model, and Implicit Favorite Model.)
2. Participate in role-playing, given a set of various situations.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, magazines, business journals, and media articles.

RESOURCES:

Steers, Richard M. INTRODUCTION TO ORGANIZATIONAL BEHAVIOR. Scott, Foresman and Company, Glenview, IL. 1981.

7.0 **COMPETENCY/SKILL:** Practices personal and human relations skills.

7.2 **TASK:** Listens well.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a situation whereby the student is given a verbal set of instructions,

EVALUATION: have the student write instructions on paper, and read instructions back to instructor.

STANDARD: Repeat accurately instructions received.

STUDENT LEARNING EXPERIENCES:

The following sample is one method which can easily and effectively be applied to listening:

Before Listening:

1. Motivation. Remind oneself of the importance of what will be communicated and how it will apply to the situation.
2. Learn about the speaker prior to and during the discussion.
3. Anticipate what will be discussed and focus your thoughts accordingly.

During the Listening Process:

1. Pay attention, filter internal or external distractions.
2. Maintain emotional balance. Attempt to not allow oneself to become excited or overly involved.
3. Organize the subject statements into main points and supportive subpoints.
4. Analyze and summarize what is being said.
5. Differentiate between relevant and irrelevant statements.

After Listening:

1. Ask pertinent questions reflecting back the communications.
2. Review the major and minor points being communicated.
3. Restate the major and minor points being communicated.
4. Attempt to categorize the information for a more complete understanding.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Listen to tape presentations and then identify the main points of the presentation.
2. Present the students with a set of verbal instructions and have students read back the instructions.
3. Invite a guest speaker to the class and have the students give oral and written critiques.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Tape recorders, pen, pencils, and paper.

RESOURCES:

Steers, Richard M. INTRODUCTION TO ORGANIZATIONAL BEHAVIOR.
Scott, Foresman and Company, Glenview, IL. 1981.

7.0 **COMPETENCY/SKILL:** Practices personal and human relations skills.

7.3 **TASK:** Gets along with people.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical work situation, i.e. a salesman for an agricultural chemical firm making a sales call,

EVALUATION: demonstrate ability to get along with others.

STANDARD: The individual should behave in accordance with recognized human relation standards, i.e. be courteous, attentive, etc.

STUDENT LEARNING EXPERIENCES:

1. Name 4 of the basic human motives that affect employer-employee relationships.
2. Cite a situation in which the "ability to get along with others" helped achieve a goal.
3. Discuss the statement: "More jobs are lost through the lack of personal relations skills than the lack of technical competency."

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Consult references to read more about human relation skills and getting along with others.
2. Bring in a magazine or newspaper article which demonstrates the importance of human relation skills in business.
3. Fill out evaluation form on page HO-4 in the reference cited below.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Office setting furniture: desk and 2 chairs.

RESOURCES:

"Resource Unit on Human Relations," Agricultural Education Section. Department of Vocational Education, Phoenix, AZ and Department of Agricultural Education, The University of Arizona, Tucson, AZ. pp. 1-6. 1971.

7.0 **COMPETENCY/SKILL:** Practices personal and human relations skills.

7.4 **TASK:** Communicates effectively.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a situation which requires the issuing of both written and verbal orders,

EVALUATION: correctly and efficiently communicate the assignment to others.

STANDARD: Both the written and oral communications must be clear and concise and the assignment must be correctly completed. The completed assignment must demonstrate the ability to effectively follow and issue instructions. (See Task 7.5)

STUDENT LEARNING EXPERIENCES:

1. Discuss the essentials of effective oral and written communication.
2. Name 4 goals of a business memo.
3. Discuss the barriers to effective communication and how they can be overcome.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Consult the references to discover more about effective business communication.
2. Role play in a communication exercise, i.e. issue instructions to a "lead" student who is then to write memos to several classmates in order to communicate a task to them. (The task can be a simple reordering of the classroom furniture). (See Task 7.5 Follow and provide instructions.)

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Memo forms, pen and/or typewriter.

RESOURCES:

Allen, J. and B.P. Lientz. EFFECTIVE BUSINESS COMMUNICATION-A PRACTICAL GUIDE. Goodyear Publishing Co., Santa Monica, CA. pp. 84-101. 1979.

7.0 **COMPETENCY/SKILL:** Practices personal and human relations skills.

7.5 **TASK:** Follows and provides instructions.

PERFORMANCE OBJECTIVE:

See Task 7.4

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

RESOURCES:

7.0 COMPETENCY/SKILL: Practices personal and human relations skills.

7.6 TASK: Works irregular hours occasionally.

PERFORMANCE OBJECTIVE:

See Task 7.14

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

RESOURCES:

7.0 **COMPETENCY/SKILL:** Practices personal and human relations skills.

7.7 **TASK:** Develops self-confidence.

PERFORMANCE OBJECTIVE:

CONDITIONS: In the context of an imaginary agribusiness institute a program which will

EVALUATION: develop self-confidence.

STANDARD: The program developed must be tailored to the individual, it must identify job fears and ways of dealing with them.

STUDENT LEARNING EXPERIENCES:

1. Discuss three common job fears.
2. Identify five behaviors which demonstrate self-confidence, i.e the ability to effectively address an audience.
3. Discuss the statement: "Action cures fear."

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Give a speech about a topic of their choice; evaluate their confidence level.
2. Read the reference material in regard to self-confidence.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Speakers podium

RESOURCES:

Swartz, D.J. THE MAGIC OF THINKING BIG. Prentice-Hall, Inc., New York, N.Y. 1985.

7.0 **COMPETENCY/SKILL:** Practices personal and human relations skills.

7.8 **TASK:** Cooperates with fellow workers.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a situation in a simulated work setting involving a group or team of students,

EVALUATION: the students should demonstrate the ability to cooperate with each other in order to complete an assignment.

STANDARD: The assignment should be accurately completed with minimal confusion.

STUDENT LEARNING EXPERIENCES:

1. Cite two practical examples where cooperation is necessary in an agribusiness.
2. Discuss the barriers to cooperation which exist in almost any group activity, (i.e. personal differences, egos, lack of interpersonal skills).
3. Describe a work or personal experience you have had which demonstrates the value of cooperation.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Read references in regard to cooperation.
2. Write about an experience they have had which demonstrates the value of cooperation.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Office setting furniture: desk and 2 chairs.

RESOURCES:

"Resource Unit on Human Relations," Agricultural Education Section. Department of Vocational Education, Phoenix, AZ. and Department of Agricultural Education, The University of Arizona, Tucson, AZ. Section HO-13. 1971. (classic text)

7.0 **COMPETENCY/SKILL:** Practices personal and human relations skills.

7.9 **TASK:** Delegates responsibility when necessary.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical situation in which an agribusiness manager has a list of tasks which he alone cannot accomplish and a group of subordinates of varying levels and types of expertise,

EVALUATION: properly delegate the tasks according to the abilities of your subordinates.

STANDARD: The manager must assign the tasks according to the abilities of the subordinates

STUDENT LEARNING EXPERIENCES:

1. Explain the essentials of delegation.
2. Discuss the concerns that many managers have about delegation.
3. Suggest the key steps involved in planning and delegating work effectively.
4. Highlight barriers to sound delegation and suggest practical ways of overcoming them.
5. Identify, in general, those tasks which can and cannot be delegated.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Provide students with job descriptions, i.e. engineer, secretary, receptionist, production worker; and tasks which need to be accomplished in a typical working day in an agribusiness, i.e. greeting a new employee, making a bank deposit, picking up a visitor from the airport, reviewing blueprints for a new installation, reading the daily mail, etc. Have them determine which tasks should be delegated and why.
2. Read the reference on delegation.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. A brief list of job descriptions: manager, secretary, production worker, etc. If none are readily available then the teacher may fabricate the descriptions in an oral description.

RESOURCES:

Seymour-Smith, L. DELEGATING EFFECTIVELY: A MANAGER'S GUIDE. Management Update Press, London, ENG. 1985.

7.0 **COMPETENCY/SKILL:** Practices personal and human relations skills.

7.10 **TASK:** Promotes (sells) yourself and your firm.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a simulated sales situation,

EVALUATION: promote yourself and your firm.

STANDARD: The individual must create a good impression and recognize that he is a reflection of his firm.

STUDENT LEARNING EXPERIENCES:

1. Name 3 attributes of the successful salesperson.
2. Discuss the statement: "Everyone working for an organization is, in one way or another, a salesperson."
3. Emphasize the importance of personal appearance in promoting oneself.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Consult references to discover more about selling and promotion of self and firm.
2. Bring to class articles about persons who are successful in promoting themselves and their respective firms.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Office setting furniture: desk and 2 chairs.

RESOURCES:

"Resource Unit 6: Salesmanship and Selling," Agricultural Education Section. Department of Vocational Education Phoenix, AZ., and Department of Agricultural Education, The University of Arizona, Tucson, AZ. p. 4. 1971.

"Resource Unit 2: Orientation to Training Program," Agricultural Education Section. Department of Vocational Education, Phoenix, AZ., and Department of Agricultural Education, The University of Arizona, Tucson, AZ. pp. 8-9, HO 10. 1971. (classic text)

7.0 COMPETENCY/SKILL: Practices personal and human relations skills.

7.11 TASK: Identifies factors which make for job success and satisfaction.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a set of circumstances (case studies) relating to different jobs,

EVALUATION: identify for each job, those factors which make for job success and satisfaction.

STANDARD: The factors must be correctly identified and enumerated.

STUDENT LEARNING EXPERIENCES:

1. Discuss personality traits and how they relate to job success and satisfaction.
2. List basic human needs that affect employee-employer relations.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Write a paragraph about a). a job that was satisfying and they were successful at, and b). a job that did not meet those criteria.
2. Read about job success and satisfaction.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Paper and pen or typewriter.

RESOURCES:

"Resource Unit on Human Relations," Agricultural Education Section. Department of Vocational Education, Phoenix, AZ., and Department of Agricultural Education, The University of Arizona, Tucson, AZ. pp. 1-6. 1971.

7.0 COMPETENCY/SKILL: Practices personal and human relations skills.

7.12 TASK: Gives needed advice diplomatically.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical work situation in which it is necessary to counsel an employee,

EVALUATION: give the needed advice diplomatically.

STANDARD: The advice must be communicated effectively with adequate concern for employee's feelings.

STUDENT LEARNING EXPERIENCES:

1. Enumerate the purposes of counseling (advice-giving), i.e. to help the employee make the most of his potential.
2. Explain why listening is most important when giving or taking advice.
3. Demonstrate poor and preferred (tactful) methods of giving advice.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Read appropriate reference material in regard to counseling, (advice-giving).
2. Write about an instance in which they thought advice was poorly given and how they thought it could have been given more tactfully.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Paper and pen.

RESOURCES:

Anastasi, T.E. FACE TO FACE COMMUNICATION. General Electric Training Division, Schenectady, NY. p.114. 1975.

7.0 COMPETENCY/SKILL: Practices personal and human relations skills.

7.13 TASK: Meets people easily.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical situation in which one is meeting someone for the first time,

EVALUATION: demonstrate correct form in above situation.

STANDARD: Handshake and exchange of greeting must take place in socially acceptable, yet relaxed fashion.

STUDENT LEARNING EXPERIENCES:

1. Demonstrate proper way of meeting a person for the first time.
2. Discuss common human relation errors which often occur when meeting someone for the first time.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Role play "meeting for the first time" and critique their performance.
2. Write about a situation in which they mishandled a first-time meeting also write about what they would do differently now that they know more about proper greeting methods.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Pen and paper.

RESOURCES:

"Resource Unit on Human Relations," Agricultural Education Section. Department of Vocational Education, Phoenix, AZ., and Department of Agricultural Education, The University of Arizona, Tucson, AZ. 1971.

7.0 **COMPETENCY/SKILL:** Practices personal and human relations skills.

7.14 **TASK:** Works under stress.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a work assignment which must be completed within a rigid time frame,

EVALUATION: demonstrate the ability to work under stress.

STANDARD: The assignment must be completed in time with an acceptable level of errors.

STUDENT LEARNING EXPERIENCES:

1. Describe the "flight or fight" reaction.
2. Discuss the statement: "A stressful situation is often not as important as the perception of that situation."
3. List ten common stressors in modern society. (See Task 7.6 Working irregular hours occasionally)
4. List three methods of dealing with stress.
5. Define "stress underload" and "stress overload".

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Consult the references in regard to stress and stress management techniques.
2. Develop their own "stress identification and reduction" program.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Paper and pen.

RESOURCES:

Forbes, R. CORPORATE STRESS: HOW TO MANAGE STRESS ON THE JOB AND MAKE IT WORK FOR YOU. Doubleday and Company, Garden City, N.Y. pp. 1-147. 1979.

7.15 TASK: Evaluates performance continually.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical situation in which you are the supervisor of several employees,

EVALUATION: evaluate their performance.

STANDARD: During the evaluation the supervisor must:

1. Identify unsatisfactory performance; identify and reinforce satisfactory performance.
2. Evaluate whether unsatisfactory performance is worth the supervisors attention.
3. Discern whether bad performance is due to lack of knowledge by employee. (Does employee know what is to be done and when? Does employee know how to perform task?)
4. Identify any barriers to good performance which are beyond the subordinates control.
5. Find out whether a). negative consequences follow performance, b). positive consequences follow non-performance. (Is the employee being "punished" for good performance? Is the employee being "rewarded" for bad performance?)
6. Discover whether performance is due to lack of desire on the part of the employee. (Could the employee do the job if he or she wanted to?)
7. Redirect the subordinate's behavior through "coaching".

STUDENT LEARNING EXPERIENCES:

1. Demonstrate proper performance "coaching" technique.
2. List three common barriers to good employee performance.
3. Conduct a mock performance evaluation with an employee (student) about a performance problem, i.e. excessive tardiness.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Suggest instances in which they have been successfully "coached."
2. Read the references in regard to performance coaching.
3. Role play a situation in which they will demonstrate correct and incorrect form in performance coaching.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. An office setting: 2 chairs, a desk.

RESOURCES:

Fournies, F.F. COACHING FOR IMPROVED WORK PERFORMANCE. Van Nostrand Reinhold Co., New York, NY. 1978.

7.0 **COMPETENCY/SKILL:** Practices personal and human relations skills.

7.16 **TASK:** Dresses appropriately for the job.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given job descriptions for a series of different jobs,

EVALUATION: select appropriate clothing for each job.

STANDARD: The clothing selected must be in accordance with social and/or safety requirements for the job selected.

STUDENT LEARNING EXPERIENCES:

1. Discuss common mistakes in selecting work clothing from both a social and safety standpoint.
2. Demonstrate safety clothing, i.e. pesticide applicator's gear.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Read reference materials about clothing selection.
2. Divide the class into two parts and for the following day have one-half dress appropriately for an interview and the other half inappropriately.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Selected safety clothing: boots, safety shoes, respirator, dust mask.

RESOURCES:

Molloy, James T. DRESS FOR SUCCESS. P.H. Wyden Press, New York, NY. 1975.

7.0 **COMPETENCY/SKILL:** Practices personal and human relations skills.

7.17 **TASK:** Remembers names and faces.

PERFORMANCE OBJECTIVE:

CONDITIONS: After being introduced to several new acquaintances, (at least 10),

EVALUATION: be able to remember their names and associate them with their faces.

STANDARD: Eight out of the ten names must be correctly remembered and associated.

STUDENT LEARNING EXPERIENCES:

1. Demonstrate memory techniques used in remembering names and faces.
2. Discuss the importances of remembering names and faces in business.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Read the reference material in regard to reading names and faces.
2. Describe their own methods for remembering names and faces and, after they have read the reference(s), have them suggest improvements in their memory technique.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. 10 people who are unknown to members of the class.

RESOURCES:

LaRayne, H. and J. Lucas. THE MEMORY BOOK. Ballantine Books, New York, NY. 1975.

7.0 COMPETENCY/SKILL: Practices personal and human relations skills.

7.18 TASK: Judges management and production potential of people.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical situation in which there are a series of applicants for a given job,

EVALUATION: select, from their written applications and brief interviews, the "best" qualified candidates.

STANDARD: From 10 applicants, 3 must be selected which meet the criteria of the interviewer. (The interviewer must state his criteria).

STUDENT LEARNING EXPERIENCES:

1. Discuss the difference between the "most qualified" and "best qualified" candidates.
2. List 3 common factors which supervisors use in judging the management and performance potential of an individual.
3. Demonstrate proper interviewing technique, both as interviewer and interviewee.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Read reference material in regard to evaluation and interviewing techniques.
2. Students may conduct mock interviews among themselves, exchanging roles as interviewer and interviewee.

INSTRUCTIONAL EQUIPMENT, MATERIALS AND SUPPLIES:

1. Office setting: Desks and chairs.

RESOURCES:

Weck, T. MOVING UP QUICKLY: HOW TO USE EXECUTIVE JOB-HUNTING TECHNIQUES. John Wiley and Sons, New York, NY. 1979.

8.0 COMPETENCY/SKILL: Applies approved safety practices to reduce injury to crops, livestock and personnel.

8.1 TASK: Sorts and loads livestock safely.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cattle, sheep, swine, or horses, that need to be transported to another location,

EVALUATION: sort and load designated livestock on selected mode of transportation, i.e, truck, van, or rail car.

STANDARD: Livestock will be sorted and loaded with a minimum of interference from the handlers, cutting down stress, speeding up the work, distributing the stock after an examination. There must be no injuries to the stock.

STUDENT LEARNING EXPERIENCES:

1. Select and discuss the best-suited method of transportation, truck or rail.
2. Prior to loading - discuss proper feed and water allocations for all classes of livestock.
3. Discuss the importance of keeping animals quiet when preparing and shipping livestock.
4. Discuss why it is necessary to be in compliance with the requirements for health certificates, permits, and brand inspection.
5. Discuss the federal 28-hour law in rail shipments, and feed or graze cattle and sheep during rail shipment between point of origin and consigned market.
6. Discuss the use of partitions in truck or car, shipment of livestock during extremes in weather, and how to prevent shipping bruises, crippling and death losses.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Develop loading charts on livestock type for safe loading in a truck or rail car.
2. Visit a livestock operation and observe, participate, and discuss methods and practices in sorting and loading livestock safely.
3. Invite a livestock inspector to address class on laws and regulations regarding livestock shipments.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, and agricultural law book.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

8.0 COMPETENCY/SKILL: Applies approved safety practices to reduce injury to crops, livestock and personnel.

8.2 TASK: Maintains equipment to prevent injury.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Task 7.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

8.0 **COMPETENCY/SKILL:** Applies approved safety practices to reduce injury to crops, livestock and personnel.

8.3 **TASK:** Keeps protective shields on equipment in place.

PERFORMANCE OBJECTIVE:

See Task 5.10 and Agriculture Power and Equipment Tasks 7.1, 7.2, 7.7, 7.26, 7.30, 7.31, 7.33, and 7.34

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

8.0 **COMPETENCY/SKILL:** Applies approved safety practices to reduce injury to crops, livestock and personnel.

8.4 **TASK:** Grounds all electrical equipment.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a situation in an equipment shop whereby the electrical receptacles are ungrounded,

EVALUATION: ground all electrical receptacles with a ground-fault interrupter.

STANDARD: Installation of ground-fault interrupter should be in accordance with manufacturer's specifications.

STUDENT LEARNING EXPERIENCES:

1. Discuss the safety aspects of double-insulated electrical tools.
2. Explain the three types of conductors that supply power to the farm shop if its equipped with 240-volt single-phase service.
3. Discuss three ways to prevent electric shock when using electrical tools.
4. Discuss why it is recommended for a person not to use a grounding adapter for plugging ground-type plugs into two-conductor circuits.
5. Discuss the proper care and use of electrical tools and extension cords.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite an electric power tool sales representative to address class on available tools and how to select safe tools for various tasks.
2. Demonstrate proper and safe use of power tools in the Ag-Power and Machinery Laboratory.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, shop manuals, shop power tools, trade/industry journals, and manufacturer's brochures.

RESOURCES:

FUNDAMENTALS OF MACHINE OPERATION: AGRICULTURAL SAFETY. Deere and Company, Moline, IL. 2ND ED. 1983.

8.0 **COMPETENCY/SKILL:** Applies approved safety practices to reduce injury to crops, livestock and personnel.

8.5 **TASK:** Reads and uses operator's manuals.

PERFORMANCE OBJECTIVE:

See Task 5.10, and Agriculture Power and Machinery Tasks 7.1, 7.2, 7.7, 7.23, 7.24, 7.25, and 7.33

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

8.0 COMPETENCY/SKILL: Applies approved safety practices to reduce injury to crops, livestock and personnel.

8.6 TASK: Stores all chemicals and flammable objects safely.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Tasks 7.1, 7.3, and 7.33

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

- 8.0 **COMPETENCY/SKILL:** Applies approved safety practices to reduce injury to crops, livestock and personnel.
-

- 8.7 **TASK:** Safely disposes of unused chemicals.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given leftover chemicals or empty containers following chemical application to field, or crop,

EVALUATION: safely dispose of unused chemical containers.

STANDARD: Extreme care will be given when disposing of chemicals to avoid contaminating soil, air and water. Insure that potential hazards are minimized.

STUDENT LEARNING EXPERIENCES:

1. Discuss safe disposal of leftover spray mixtures.
2. Identify and discuss local approved landfills for disposal of leftover chemicals.
3. The pesticide safety team headquarters maintains a 24-hour answering service - toll free number (800) 424-9300, discuss when a person should notify the pesticide safety team.
4. Discuss procedures to use for storing empty chemical containers prior to disposal.
5. Discuss state and federal EPA regulations on disposal of chemical containers.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Practice chemical safety by acting out a chemical emergency.
2. Use student class presentations on chemical storage and handling to create an awareness of their danger.
3. Invite a local fire official or a representative of the Environmental Protection Agency to address the class on chemical safety and fire hazards.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, chemical manufacturer's brochures, and Environmental Protection Agency publications.

RESOURCES:

FUNDAMENTALS OF MACHINE OPERATION: CROP CHEMICALS. Deere and Company, Moline, IL. 2ND ED. 1982.

8.0 **COMPETENCY/SKILL:** Applies approved safety practices to reduce injury to crops, livestock and personnel.

8.8 **TASK:** Stores medications safely.

PERFORMANCE OBJECTIVE:

See Tasks 4.6 and 4.14

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

8.0 **COMPETENCY/SKILL:** Applies approved safety practices to reduce injury to crops, livestock and personnel.

8.9 **TASK:** Makes safety inspections.

PERFORMANCE OBJECTIVE:

See Task 5.10, and Agriculture Power and Machinery Tasks 7.1, 7.2, 7.7, 7.23, 7.24, 7.25, and 7.33

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

8.0 **COMPETENCY/SKILL:** Applies approved safety practices to reduce injury to crops, livestock and personnel.

8.10 **TASK:** Instructs employees on safe use of tools and equipment.

PERFORMANCE OBJECTIVE:

See Task 5.10, and Agriculture Power and Machinery Tasks 7.1, 7.2, 7.7, 7.23, 7.24, 7.25, and 7.33

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

9.0 **COMPETENCY/SKILL:** Selects and fits livestock for show to improve marketability of the herd.

9.1 **TASK:** Selects animals for showing.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cattle, sheep, swine, or horses,

EVALUATION: select designated animals for showing.

STANDARD: Selection of animals will be based on type or individuality, on pedigree, on show-ring winnings, and based on production testing. Selected animals will be in compliance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Identify the qualifications of a good livestock judge.
2. Discuss and demonstrate how the class is numbered, and keep the numbers straight.
3. Discuss why it is important for the judge to keep in a position where the class can be seen at all time.
4. Demonstrate filling the card completely and correctly, and remembering the correct numbers.
5. Demonstrate giving reasons, using good poise and eye contact.
6. Demonstrate the use of comparative terms and descriptive terms in giving reasons.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Examine animals in order indicated: side views; rear view; front view; and handling.
2. Discuss the points listed under "ideal type" and "the common faults".
3. Using a scorecard, rank or place the animals according to their consistent rating on all points.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, pencils, scorecards, and livestock.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

9.0 COMPETENCY/SKILL: Selects and fits livestock for show to improve marketability of the herd.

9.2 TASK: Selects equipment for showing livestock.

PERFORMANCE OBJECTIVE:

See Tasks 9.3, 9.4 and 9.5

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

- 9.0 **COMPETENCY/SKILL:** Selects and fits livestock for show to improve marketability of the herd.
-

- 9.3 **TASK:** Prepares truck and/or trailer for hauling.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given the class of animal; cattle, sheep, swine, or horses, that need to be transported to another location,

EVALUATION: prepare truck and/or trailer for hauling designated class of animal.

STANDARD: The transport vehicle will be clean and disinfected, feed and supplies placed on a deck, proper bedding utilized, if necessary air condition the vehicle, schedule the transportation so that animals will arrive within the limitations imposed by the show.

STUDENT LEARNING EXPERIENCES:

1. Select and discuss equipment needed for showing to include transportation, grooming equipment, and feed supplies.
2. Discuss loading procedures for transporting cattle, sheep, swine, and horses.
3. Identify and select the proper bedding for class of animal; cattle, sheep, swine, and horses.
4. Discuss the importance of keeping fresh and clean bedding.
5. Discuss why it is recommended to feed limited rations.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Following a demonstration, practice loading designated animal on vehicle.
2. Have students develop loading charts for class of animals to be transported.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, livestock, truck and/or trailer, bedding and feed supplies.

RESOURCES:

Ensminger, M. E. THE STOCKMAN'S HANDBOOK. The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

9.0 **COMPETENCY/SKILL:** Selects and fits livestock for show to improve marketability of the herd.

9.4 **TASK:** Shows animals.

PERFORMANCE OBJECTIVE:

See Task 9.7

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

9.0 **COMPETENCY/SKILL:** Selects and fits livestock for show to improve marketability of the herd.

9.5 **TASK:** Trains animals to lead, stand properly, and to be handled by judge.

PERFORMANCE OBJECTIVE:

See Task 9.7

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

9.0 COMPETENCY/SKILL: Selects and fits livestock for show to improve marketability of the herd.

9.6 TASK: Washes and sets hair.

PERFORMANCE OBJECTIVE:

See Task 9.7

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

- 9.0 **COMPETENCY/SKILL:** Selects and fits livestock for show to improve marketability of the herd.
-

9.7 **TASK:** Clips, blocks, and grooms animal according to current style.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a class of animal; beef cattle, dairy cattle, sheep, swine, or horses, grooming equipment and supplies,

EVALUATION: clip, block, and groom designated animal according to current style.

STANDARD: The designated animal will be clipped, blocked, and groomed according to current style and in compliance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Demonstrate and discuss the essential points in grooming designated animal.
2. Demonstrate and discuss the essential points in clipping designated animal.
3. Demonstrate and discuss washing and setting hair on the designated animal.
4. Demonstrate and discuss procedures for "rough" blocking sheep.
5. Discuss the essential steps in training, grooming, and showing different classes of animals.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Train designated animal to lead, stand properly, and to be handled by judge.
2. Following demonstration, demonstrate grooming skills on designated animals.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, livestock, shears, clippers, curry combs, blankets, oil, washing equipment and supplies.

RESOURCES:

Ensminger, M. E. **THE STOCKMAN'S HANDBOOK.** The Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

9.0 **COMPETENCY/SKILL:** Selects and fits livestock for show to improve marketability of the herd.

9.8 **TASK:** Keeps bedding clean and fresh.

PERFORMANCE OBJECTIVE:

 See Task 9.3

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

10.0 **COMPETENCY/SKILL:** Selects seed to maximize yield.

10.1 **TASK:** Evaluates characteristics of varieties.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a selection of seed varieties,

EVALUATION: evaluate characteristics of designated seed
varieties.

STANDARD: Evaluation of seed characteristics should include:
Crop seeding rate per acre, seeds per pound/gram;
weight per bushel; germination time; temperature
type; growth habit; chromosome number; and photo-
periodic reaction.

STUDENT LEARNING EXPERIENCES:

1. Identify and discuss factors and select variety or strain best suited to local conditions and resources (soil, growing season, yield, resistance, irrigation, harvesting, equipment, etc.).
2. List and discuss the requirements for seed certification.
3. Discuss The Federal Seed Act of 1939 requirements, restrictions, and punishment provided to protect the farmer.
4. Discuss and define The International Crop Improvement Association Classes of Seed: breeder seed; foundation seed; registered seed; and certified seed.
5. Discuss the requirements for registration or certification of seed produced by members of seed associations.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a seed sales representative to address class about varietal seeds marketed by his/her firm.
2. Conduct a simple germination experiment. Save seeds from previous years, or obtain old seeds, to demonstrate decrease in germination potential with age.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, seed catalogs, samples of varietal seeds, petri dishes, and moist paper.

RESOURCES:

Martin, John H., Warren H. Leonard, and David L. Stamp.
PRINCIPLES OF FIELD CROP PRODUCTION. MacMillan Publishing
Company, Inc., NY. 4TH ED. 1987.

10.0 **COMPETENCY/SKILL:** Selects seed to maximize yield.

10.2 **TASK:** Selects and secures seed.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a selection of seed varieties and their characteristics,

EVALUATION: select and secure seed that is most suitable for local conditions and resources.

STANDARD: The selected seed should result in large, vigorous, plants which tend to grow rapidly and produce heavily. Seed selection must be in accordance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Discuss the characteristics to look for when selecting quality seed.
2. Discuss the economics of using quality seed in the planting program.
3. Explain why seed of high quality is less likely to be infested by disease pathogens or insects.
4. Read and evaluate a foundation seed tag, registered seed tag, and certified seed tag.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a seed sales representative to address class about varietal seeds marketed by his/her firm.
2. Following a demonstration, identify seed variety in a package of mixed seed varieties.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, seed catalog, samples of varietal seeds, and seed tags.

RESOURCES:

STUDENT REFERENCE ON PLANT PRODUCTION MANAGEMENT FOR CORE CURRICULUM. Department of Agricultural Education, The University of Arizona, Tucson, AZ. REF. 9. 1980.

10.0 **COMPETENCY/SKILL:** Selects seed to maximize yield.

10.3 **TASK:** Recognizes factors and selects variety or strain best suited to local conditions and resources (soil, growing season, yield, resistance, irrigation, harvesting, equipment, etc.).

PERFORMANCE OBJECTIVE:

See Task 10.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

10.0 **COMPETENCY/SKILL:** Selects seed to maximize yield.

10.4 **TASK:** Reads and evaluates a seed tag.

PERFORMANCE OBJECTIVE:

See Task 10.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

10.0 **COMPETENCY/SKILL:** Selects seed to maximize yield.

10.5 **TASK:** Recognizes the requirements for seed certification.

PERFORMANCE OBJECTIVE:

 See Task 10.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

10.0 **COMPETENCY/SKILL:** Selects seed to maximize yield.

10.6 **TASK:** Adjusts the recommended seeding rate to allow for differences
 in purity, germination, seed size, and row width.

PERFORMANCE OBJECTIVE:

 See Task 10.1, and Agriculture Power and Machinery
 Competencies 7.0, 23.0, 24.0, and 25.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

11.0 COMPETENCY/SKILL: Practices approved seedbed preparation and planting techniques to maximize yields.

11.1 TASK: Adjusts and calibrates planters to get desired number of plants.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competencies 7.0 and 23.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

11.0 COMPETENCY/SKILL: Practices approved seedbed preparation and planting techniques to maximize yields.

11.2 TASK: Identifies the characteristics of a good seedbed and prepares a seedbed for planting.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a field plot, tractor, moldboard plow, or disk plow, harrow, land plane, and lister,

EVALUATION: identify the characteristics and prepare a good seedbed.

STANDARD: The well-prepared seedbed should have the following characteristics; an ample supply of moisture to carry the seeds through the germinating and early seedling period; a physical condition that allows moisture to be supplied continuously to the seedling; have good aeration; be free of old plant material and trash; be free from weeds; be level and well shaped for row crops.

STUDENT LEARNING EXPERIENCES:

1. Explain how to properly prepare a seedbed for optimum germination.
2. Discuss the importance of the time factor when preparing a seedbed.
3. List the advantages of early seedbed preparation.
4. Discuss why it is important for the soil to have the proper amount of moisture available for seedbed preparation.
5. Discuss cultural practices used in seedbed preparation.
6. Discuss and compare seeding methods.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Participate in a seedbed preparation operation.
2. Visit a local farm and observe and discuss local seedbed preparation methods.
3. Invite a local farm manager to address the class on the economics and equipment field efficiencies when planning for seedbed preparation.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals.
2. Tractor, moldboard plows or disk plow, harrow, land plane, lister, and field plot.

RESOURCES:

STUDENT REFERENCE ON PLANT PRODUCTION MANAGEMENT FOR CORE CURRICULUM. Department of Agricultural Education, The University of Arizona, Tucson, AZ. REF. 9. 1980.

11.0 **COMPETENCY/SKILL:** Practices approved seedbed preparation and planting techniques to maximize yields.

11.3 **TASK:** Compares seeding methods.

PERFORMANCE OBJECTIVE:

See Task 11.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

11.0 **COMPETENCY/SKILL:** Practices approved seedbed preparation and planting techniques to maximize yields.

11.4 **TASK:** Recommends the proper seeding rate and adjusts the rate for seed quality.

PERFORMANCE OBJECTIVE:

See Task 10.1 and Agriculture Power and Machinery Competencies 7.0, 23.0, 24.0, and 25.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

11.0 **COMPETENCY/SKILL:** Practices approved seedbed preparation and planting techniques to maximize yields.

11.5 **TASK:** Determines soil moisture conditions necessary for planting.

PERFORMANCE OBJECTIVE:

See Task 11.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

11.0 **COMPETENCY/SKILL:** Practices approved seedbed preparation and planting techniques to maximize yields.

11.6 **TASK:** Considers local and seasonal weather variations and soil type when determining planting time for optimal growing conditions.

PERFORMANCE OBJECTIVE:

See Task 10.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

11.0 **COMPETENCY/SKILL:** Practices approved seedbed preparation and planting techniques to maximize yields.

11.7 **TASK:** Performs field adjustments and minor field repairs on planting equipment and power sources.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competencies 7.0, 23.0, 24.0, and 25.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

11.0 **COMPETENCY/SKILL:** Practices approved seedbed preparation and planting techniques to maximize yields.

11.8 **TASK:** Operates planting equipment and power sources.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Task 2.1 and Competencies 7.0, 23.0, 24.0, and 25.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

11.0 **COMPETENCY/SKILL:** Practices approved seedbed preparation and planting techniques to maximize yields.

11.9 **TASK:** Evaluate the most recent findings pertaining to time of planting, depth of planting, width of rows, spacing within the rows, and method of planting.

PERFORMANCE OBJECTIVE:

See Task 10.1 and Agriculture Power and Machinery Competencies 7.0, 23.0, 24.0, and 25.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

12.0 **COMPETENCY/SKILL:** Selects, maintains, and operates tillage equipment to ensure proper seedbed preparation.

12.1 **TASK:** Determines the time to plow land.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a field plot, tractor and necessary equipment, seed type and variety, and environmental conditions,

EVALUATION: determine the time to plow land and select proper equipment for tillage operation.

STANDARD: Considerations should be given to environmental requirements of the seed and the crop, planting date early enough to reach maturity without being damaged by frost, insects or diseases, rate of planting, machinery and equipment needs.

STUDENT LEARNING EXPERIENCES:

1. For planting various crops, discuss the environmental requirements of the seed and crop.
2. Discuss the hazard of planting too early.
3. Discuss when cool-season crops are usually seeded and identify the reasons for the planting techniques used.
4. Discuss the planting rate and the objective in spacing crops.
5. Discuss what determines the depth of planting.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Following a demonstration, adjust and calibrate planters to get desired number of plants.
2. Determine soil moisture conditions necessary for planting.
3. Select, demonstrate machinery and equipment operation, and perform field adjustment on equipment.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, seed catalogs.
2. Tractor, disk, harrows, land plane, planter, seed, and designated field plot.

RESOURCES:

STUDENT REFERENCE ON PLANT PRODUCTION MANAGEMENT FOR CORE CURRICULUM. Department of Agricultural Education, The University of Arizona, Tucson, AZ. REF. 9. 1980.

12.0 **COMPETENCY/SKILL:** Selects, maintains, and operates tillage equipment to ensure proper seedbed preparation.

12.2 **TASK:** Operates plow and tillage equipment and power sources safely.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Tasks 2.1, and Competencies 7.0, 23.0, 24.0, and 25.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

12.0 **COMPETENCY/SKILL:** Selects, maintains, and operates tillage equipment to ensure proper seedbed preparation.

12.3 **TASK:** Performs field adjustments and minor field repairs on equipment and power sources in the tillage operation.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competencies 7.0, 23.0, 24.0, and 25.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

12.0 **COMPETENCY/SKILL:** Selects, maintains, and operates tillage equipment to ensure proper seedbed preparation.

12.4 **TASK:** Selects proper equipment for tillage operation.

PERFORMANCE OBJECTIVE:

See Task 12.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.1 **TASK:** Applies adequate soil water by irrigation when needed.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a field crop, irrigation schedule, irrigation system, field size, growth stage of crop, and soil type,

EVALUATION: apply adequate soil water by irrigation when needed on designated field.

STANDARD: The timing of irrigation and the amount of water applied should include; water needs of the crop, availability of water with which to irrigate, and capacity of the "root zone" soil to store water. The applied irrigation will be in accordance with instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Identify and discuss the water requirements of crops and be able to use water measurements and conservation factors.
2. Identify and discuss soil and plant conditions indicating irrigation needs.
3. Demonstrate the operation of irrigation equipment safely.
4. Perform field adjustments and minor field repairs on irrigation equipment and power sources.
5. Perform and discuss moisture test of soil to determine need of irrigation.
6. Evaluate and discuss the effects of moisture on quantity and quality of crop.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite an irrigation systems sales representative to address class on various types of irrigation systems available to farmers/ranchers.
2. Invite a State Water Resources Management Representative to address class on present and future needs for their region.
3. Visit a farm/ranch to observe and discuss irrigation systems and programs practiced in the water district.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, irrigation systems, manufacturer's brochures, and if available, agriculture laboratory irrigation equipment.

RESOURCES:

STUDENT REFERENCE ON PLANT PRODUCTION MANAGEMENT FOR CORE CURRICULUM. Department of Agricultural Education, The University of Arizona, Tucson, AZ. REF. 9. 1980.

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.2 **TASK:** Determines the minimum requirements that pertain to the design, installation, and performance of sprinkler and furrow irrigation equipment.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a field, soil type, slope of field, size of field, variety of crops, water needs of crops, and topography,

EVALUATION: determine the minimum requirements that pertain to the design, installation, and performance of sprinkler and furrow irrigation equipment for designated fields.

STANDARD: The selected irrigation system, for sprinkler and furrow irrigation, should have the following factors considered prior to design and installation of irrigation equipment.

1. Quality of water.
2. Rate and method of water delivery.
3. Water costs.
4. Soil texture, slope, and topography.
5. Cost of land preparation.
6. Value of land and its productive potential.
7. Crops to be grown.
8. Prevailing practices of the water district.

STUDENT LEARNING EXPERIENCES:

1. Discuss the state and local stream rights and groundwater policy.
2. Identify and discuss water quality, interpret water analysis reports, use of water classification tables, and availability of water supply.
3. Determine the type and slope of soil.
4. Determine available water supply.
5. Determine and discuss the cost of installation and cost of operating an irrigation system.
6. Discuss the irrigation plan and set up an irrigation program to maximize returns.
7. Identify and discuss methods utilized to measure and control water distribution.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite an irrigation systems sales representative to address class on various types of irrigation systems available to farmers/ranchers.
2. Invite a local water resource - district representative to address class on present and future needs for the district.
3. Visit a farm/ranch to observe and discuss irrigation systems and programs practiced in the water district.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals.
2. Irrigation systems manufacturer's brochures, and water analysis reports.

RESOURCES:

STUDENT REFERENCE ON PLANT PRODUCTION MANAGEMENT FOR CORE CURRICULUM. Department of Agricultural Education, The University of Arizona, Tucson, AZ. REF. 9. 1980.

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.3 **TASK:** Know the water requirements of crops and be able to use water measurements and conservation factors.

PERFORMANCE OBJECTIVE:

See Task 13.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.4 **TASK:** Be familiar with state and local stream rights and groundwater policies.

PERFORMANCE OBJECTIVE:

See Task 13.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.5 **TASK:** Considers water quality, interpret water analysis reports, use of water classification tables, and availability of water supply.

PERFORMANCE OBJECTIVE:

See Task 13.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.6 **TASK:** Plans and sets up an irrigation program to maximize returns.

PERFORMANCE OBJECTIVE:

See Task 13.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.7 **TASK:** Makes moisture test of soil to determine need of irrigation.

PERFORMANCE OBJECTIVE:

See Task 13.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.8 **TASK:** Operates irrigation equipment safely.

PERFORMANCE OBJECTIVE:

See Task 13.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.9 **TASK:** Performs field adjustments and minor field repairs on irrigation equipment and power sources.

PERFORMANCE OBJECTIVE:

See Task 13.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.10 **TASK:** Identifies soil and plant conditions indicating irrigation needs.

PERFORMANCE OBJECTIVE:

See Task 13.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.11 **TASK:** Measures and controls water distribution.

PERFORMANCE OBJECTIVE:

See Task 13.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.12 **TASK:** Evaluates the effects of moisture on quantity and quality of crop.

PERFORMANCE OBJECTIVE:

See Task 13.1

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.13 **TASK:** Determines the type and slope of soil.

PERFORMANCE OBJECTIVE:

See Task 13.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.14 **TASK:** Determines available water supply.

PERFORMANCE OBJECTIVE:

See Task 13.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

13.0 **COMPETENCY/SKILL:** Designs, constructs, and operates irrigation systems consistent with water requirements of crops.

13.15 **TASK:** Determines cost of installation and cost of operating an irrigation system.

PERFORMANCE OBJECTIVE:

See Task 13.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 COMPETENCY/SKILL: Manages an insect control program to reduce losses and maximize yields.

14.1 TASK: Identifies insect pests that are major nuisances to crops and livestock in your locality and the characteristics of insect damage.

PERFORMANCE OBJECTIVE:

See Tasks 14.4, 14.5 and Competency 4.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 **COMPETENCY/SKILL:** Manages an insect control program to reduce losses and maximize yields.

14.2 **TASK:** Identifies nematode damage and plans effective control.

PERFORMANCE OBJECTIVE:

See Tasks 14.4 and 14.5

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 **COMPETENCY/SKILL:** Manages an insect control program to reduce losses and maximize yields.

14.3 **TASK:** Calibrates pesticide applicators.

PERFORMANCE OBJECTIVE:

 See Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 **COMPETENCY/SKILL:** Manages an insect control program to reduce losses and maximize yields.

14.4 **TASK:** Plans effective insect control program and compares the advantages and disadvantages of chemical control versus cultural control.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical situation of managing an insect control program for a farm/ranch,

EVALUATION: plan and organize an effective insect control program and compare the advantages and disadvantages of chemical control versus cultural control for designated insects and crops/livestock.

STANDARD: The effective insect control program should be an economical approach with consideration given to the following: scout or survey the crop to determine the insect infestation, identify the specific insect(s), know the life cycles, habits, and behavior of insects, the kind and extent of damage should be determined. If possible, rely upon cultural and biological practices for control. The insect control program will be in accordance with the instructor's specifications.

STUDENT LEARNING EXPERIENCES:

1. Identify insect pests that are major nuisances to crops and livestock in the district and the characteristics of insect damage.
2. Identify nematode damage and discuss effective control programs.
3. Discuss the regulations for direction on how to obtain and maintain necessary licenses for use of restricted pesticides.
4. Evaluate and discuss the life cycle of insects to determine appropriate control procedures.
5. Identify and discuss methods by which insects are spread.
6. Discuss the use of attractants and/or traps to anticipate a rise in insect population.
7. Select and discuss the best insect control program in terms of economic costs, returns, and environmental impact.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite an insecticide/pesticide sales representative to address the class on insect/pest control programs.
2. Invite an Environmental Protection Agency Representative to discuss environmental protection controls and the agricultural community's responsibilities to abide by the EPA's rules and regulations.
3. Visit a local farm equipment dealership to observe and discuss equipment designed to aid in the control of insects/pests.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, manufacturer's brochures, and EPA regulations.

RESOURCES:

STUDENT REFERENCE ON INSECTS FOR CORE CURRICULUM. Department of Agricultural Education, The University of Arizona, Tucson, AZ. REF. 7. 1980.

14.0 **COMPETENCY/SKILL:** **Manages an insect control program to reduce losses and maximize yields.**

14.5 **TASK:** **Distinguishes between nutritional deficiencies, fertilizer damage, chemical damage, insect damage, insect-borne diseases, fungi-borne diseases, and viruses.**

PERFORMANCE OBJECTIVE:

CONDITIONS: **Given a field with the crop showing signs of damage,**

EVALUATION: **identify the type damage afflicting the designated crop.**

STANDARD: **The damage should be identified as nutritional deficiency, fertilizer damage, chemical damage, insect damage, insect-borne disease, fungi-born disease, or virus caused.**

STUDENT LEARNING EXPERIENCES:

1. **Identify and discuss insect pests that are major nuisances to crops in the district and the characteristics of insect damage.**
2. **Identify nematode damage and discuss effective control programs.**
3. **Identify and distinguish between harmful and beneficial crop insects.**
4. **Identify and discuss methods by which insects are spread.**
5. **Identify and discuss crop diseases and interpret their effect.**
6. **Identify the methods by which plant diseases are spread.**
7. **Recognize and discuss plant nutritional deficiencies, and fertilizer damage.**
8. **Evaluate and discuss the life cycle of insects to determine appropriate control procedures.**

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Visit a local farm to observe and discuss insect, plant disease, and viruses/fungi-borne diseases control programs.
2. Invite an insecticide/pesticide/fertilizer sales representative to address the class on control programs.
3. Invite an Environmental Protection Agency Representative to discuss environmental protection controls and the agricultural community's responsibilities to abide by the EPA's rules and regulations.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, manufacturer's brochures, and EPA regulations.

RESOURCES:

STUDENT REFERENCE ON INSECTS FOR CORE CURRICULUM. Department of Agricultural Education, The University of Arizona, Tucson, AZ. REF. 7. 1980.

14.0 **COMPETENCY/SKILL:** Manages an insect control program to reduce losses and maximize yields.

14.6 **TASK:** Summarizes the precautions which should be followed when using pesticides.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given personal safety equipment, pesticide, spray equipment, and identified pest,

EVALUATION: summarize the precautions which should be followed when using pesticides for designated pest(s).

STANDARD: A detailed list summarizing precautions to follow, and an awareness of hazards to anyone using chemicals and machinery should include the following:

1. Avoid accidents.
2. Know information on hazards and safe working procedures.
3. Read the container label twice before handling the chemical.
4. Read and follow all instructions on the label.
5. Know the kinds of exposure, oral, dermal, and inhalation, and how to avoid exposure to chemicals.
6. Use protective clothing, hat, gloves, apron, boots, goggles, rubbered coat, long-sleeve shirt, rubber trousers, and respirators.
7. Pesticide storage policy and procedures should be acknowledged.
8. Have a thorough knowledge of chemical disposal rules and regulations, and follow them.

STUDENT LEARNING EXPERIENCES:

1. Select and wear protective clothing while working with fungicides and pesticides.
2. Read and interpret the contents, direction for use, and cautions on the label of insecticides and fungicides.
3. Identify and distinguish between harmful and beneficial crop insects.
4. Demonstrate and discuss how to mix insecticides and fungicides for control of insects.
5. Appraise performance of recommended insecticides.
6. Meet state requirements for use of E.P.A. designated "Restricted Pesticide".

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite an insecticide/pesticide sales representative to address the class on insect/pest control programs.
2. Visit a local farm equipment dealership to observe and discuss spray equipment and proper care and safety precautions to use during and after operation.
3. Invite an Environmental Protection Agency Representative to discuss environmental protection controls and recommended safety precautions to follow when working with chemicals.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, manufacturer's brochures, E.P.A. regulations, personal safety equipment, and spray equipment.

RESOURCES:

FUNDAMENTALS OF MACHINE OPERATION: CROP CHEMICALS. Deere and Company, Moline, IL. 2ND ED. 1982.

14.0 **COMPETENCY/SKILL:** Manages an insect control program to reduce losses and maximize yields.

14.7 **TASK:** Use attractants and/or traps to anticipate a rise in insect population.

PERFORMANCE OBJECTIVE:

See Task 14.4

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 **COMPETENCY/SKILL:** Manages an insect control program to reduce losses and maximize yields.

14.8 **TASK:** Selects and wears protective clothing while working with fungicides and insecticides.

PERFORMANCE OBJECTIVE:

See Task 14.6

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 **COMPETENCY/SKILL:** Manages an insect control program to reduce losses and maximize yields.

14.9 **TASK:** Mixes insecticides and fungicides for control of insects.

PERFORMANCE OBJECTIVE:

See Task 14.6

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 **COMPETENCY/SKILL:** Manages an insect control program to reduce losses and maximize yields.

14.10 **TASK:** Reads and interprets the contents, directions for use, and cautions on the label of insecticides and fungicides.

PERFORMANCE OBJECTIVE:

See Tasks 4.0 and 14.6

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 COMPETENCY/SKILL: Manages an insect control program to reduce losses and maximize yields.

14.11 TASK: Meets state requirements for use of E.P.A. designated "Restricted Pesticide".

PERFORMANCE OBJECTIVE:

See Tasks 4.0 and 14.6

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 **COMPETENCY/SKILL:** Manages an insect control program to reduce losses and maximize yields.

14.12 **TASK:** Identify and distinguish between harmful and beneficial crop insects.

PERFORMANCE OBJECTIVE:

See Tasks 14.5 and 14.6

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 **COMPETENCY/SKILL:** Manages an insect control program to reduce losses and maximize yields.

14.13 **TASK:** Appraises performance of recommended insecticides.

PERFORMANCE OBJECTIVE:

See Task 14.6

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 COMPETENCY/SKILL: Manages an insect control program to reduce losses and maximize yields.

14.14 TASK: Selects the best insect control program in terms of economic costs, returns, and environmental impact.

PERFORMANCE OBJECTIVE:

See Tasks 14.4, 14.5 and Competency 4.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 COMPETENCY/SKILL: Manages an insect control program to reduce losses and maximize yields.

14.15 TASK: Evaluates life cycle of insects to determine appropriate control procedures.

PERFORMANCE OBJECTIVE:

See Tasks 14.4, 14.5 and Competency 4.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 **COMPETENCY/SKILL:** **Manages an insect control program to reduce losses and maximize yields.**

14.16 **TASK:** **Identifies methods by which insects are spread.**

PERFORMANCE OBJECTIVE:

See Tasks 14.4, 14.5 and Competency 4.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 **COMPETENCY/SKILL:** Manages an insect control program to reduce losses and maximize yields.

14.17 **TASK:** Operates insect control equipment and power sources safely.

PERFORMANCE OBJECTIVE:

See Competency 4.0, and Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 **COMPETENCY/SKILL:** Manages an insect control program to reduce losses and maximize yields.

14.18 **TASK:** Performs field adjustments and minor field repairs on insect control equipment.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

14.0 **COMPETENCY/SKILL:** Manages an insect control program to reduce losses and maximize yields.

14.19 **TASK:** Maintains necessary licenses for use of restricted pesticides.

PERFORMANCE OBJECTIVE:

See Task 14.4

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

15.0 COMPETENCY/SKILL: Manages a plant disease control program to reduce losses and maximize yield.

15.1 TASK: Operates disease control equipment and power sources safely.

PERFORMANCE OBJECTIVE:

See Competency 4.0, and Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

15.0 **COMPETENCY/SKILL:** Manages a plant disease control program to reduce losses and maximize yield.

15.2 **TASK:** Performs field adjustments and minor field repairs on disease control equipment and power sources.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

15.0 **COMPETENCY/SKILL:** Manages a plant disease control program to
reduce losses and maximize yield.

15.3 **TASK:** Calibrates disease control applicators correctly.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

15.0 **COMPETENCY/SKILL:** Manages a plant disease control program to reduce losses and maximize yield.

15.4 **TASK:** Cleans and disinfects all equipment and storage facilities with live steam or chemicals to control diseases.

PERFORMANCE OBJECTIVE:

See Tasks 15.11, Competency 8.0, and Agriculture Power and Machinery Tasks 1.1, 1.6, 2.5, and Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

15.0 **COMPETENCY/SKILL:** Manages a plant disease control program to reduce losses and maximize yield.

15.5 **TASK:** Interprets and follows chemical label directions for fungicide storing, mixing, handling.

PERFORMANCE OBJECTIVE:

See Tasks 14.6 and Competencies 4.0, and 8.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

15.0 **COMPETENCY/SKILL:** Manages a plant disease control program to reduce losses and maximize yield.

15.6 **TASK:** Identifies dangers of chemical carry residues in soil and application equipment.

PERFORMANCE OBJECTIVE:

See Task 15.11, Competencies 4.0, 8.0, 14.0 and Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

15.0 **COMPETENCY/SKILL:** Manages a plant disease control program to
reduce losses and maximize yield.

15.7 **TASK:** Identifies crop diseases and interprets their effect.

PERFORMANCE OBJECTIVE:

See Tasks 14.5, 15.11

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

15.0 **COMPETENCY/SKILL:** Manages a plant disease control program to reduce losses and maximize yield.

15.8 **TASK:** Identifies and appraises the performance of recommended pesticides.

PERFORMANCE OBJECTIVE:

See Task 15.11

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

15.0 **COMPETENCY/SKILL:** Manages a plant disease control program to reduce losses and maximize yield.

15.9 **TASK:** Identifies the methods by which diseases are spread.

PERFORMANCE OBJECTIVE:

See Tasks 14.5, 15.11

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

15.0 **COMPETENCY/SKILL:** Manages a plant disease control program to reduce losses and maximize yield.

15.10 **TASK:** Evaluates environmental impact of disease control programs.

PERFORMANCE OBJECTIVE:

See Tasks 14.5, 14.6

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

15.0 **COMPETENCY/SKILL:** Manages a plant disease control program to reduce losses and maximize yield.

15.11 **TASK:** Selects a recommended disease control program in terms of expected costs and returns.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical situation of managing a plant disease control program for a farm/ranch,

EVALUATION: plan and organize an effective plant disease control program in terms of expected costs and returns.

STANDARD: The effective plant disease control program should have consideration given to the following:

1. The capital investment in spray machinery.
2. Costs of chemicals for treatment.
3. Labor costs.
4. The size of an eradication campaign.
5. Transportation and storage costs.

STUDENT LEARNING EXPERIENCES:

1. Identify and discuss crop diseases and interpret their effect.
2. Identify and discuss dangers of chemical carryover of residues in soil and application equipment.
3. Identify and discuss the methods by which diseases are spread.
4. Interpret and follow chemical label directions for fungicide storing, mixing, and handling.
5. Identify and appraise the performance of recommended pesticides.
6. Evaluate and discuss environmental impact of disease control programs.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Report how residues are assessed in soil.
2. Use class participation method to determine direct and indirect costs, as in an open discussion.
3. Following a demonstration, perform adjustments on spray equipment.
4. Following a demonstration, operate designated spray machinery.
5. Demonstrate the proper method to safely store or dispose of hazardous chemicals.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, EPA regulations, symptoms, causal agents and controls of common plant diseases chart, and spray machinery.

RESOURCES:

STUDENT REFERENCE ON PLANT DISEASES FOR CORE CURRICULUM.
Department of Agricultural Education, The University of Arizona,
Tucson, AZ. REF. 6. 1977.

16.0 COMPETENCY/SKILL: Manages a weed-control program to reduce losses and maximize yield.

16.1 TASK: Calibrates herbicide applicators.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

16.0 **COMPETENCY/SKILL:** Manages a weed-control program to reduce losses and maximize yield.

16.2 **TASK:** Identifies weeds that are a major nuisance to the crops and livestock within the local community and plans an effective herbicide or cultural weed control program. (Pre-emergence, post-emergence, cost, rate, methods, and dangers.)

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical situation of managing a weed-control program for a farm/ranch,

EVALUATION: plan and organize an effective weed-control program in terms of expected costs and returns.

STANDARD: The effective weed-control program should have consideration given to the following:

1. Weeds cause a reduction in crop yields.
2. The quality of agricultural products is reduced.
3. The value of land is reduced.
4. Weeds serve as intermediate hosts for plant disease organisms and insects.
5. Some weeds impair the health of humans and animals.
6. Some weeds are poisonous.
7. Weeds increase production costs.
8. The capital investment in spray machinery.
9. Costs of chemicals for treatment.
10. Labor costs.
11. The size of an eradication campaign.

STUDENT LEARNING EXPERIENCES:

1. Identify and discuss weeds that are a major nuisance to the crops and livestock and interpret their effect.
2. Identify and discuss the methods by which weeds are spread.
3. Evaluate and discuss the economic impact of weeds.
4. Interpret and follow chemical label directions for herbicide storing, mixing, and handling.
5. Identify and appraise the performance of recommended herbicides.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Report how residues are assessed in soil.
2. Use class participation method to determine direct and indirect costs, as in an open discussion.
3. Following a demonstration, perform adjustments on spray equipment.
4. Following a demonstration, operate designated spray machinery.
5. Demonstrate the proper method to safely store or dispose of hazardous chemicals.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, EPA regulations, life cycle, leaf type, growth habit and method of propagation for common weeds chart, and spray machinery.

RESOURCES:

STUDENT REFERENCE ON WEEDS FOR CORE CURRICULUM. Department of Agricultural Education, The University of Arizona, Tucson, AZ. REF. 8. 1980.

16.0 COMPETENCY/SKILL: Manages a weed-control program to reduce losses and maximize yield.

16.3 TASK: Evaluates economic impact of weeds.

PERFORMANCE OBJECTIVE:

See Task 16.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

16.0 COMPETENCY/SKILL: Manages a weed-control program to reduce losses and maximize yield.

16.4 TASK: Identifies the methods with which weeds spread.

PERFORMANCE OBJECTIVE:

See Task 16.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

16.0 COMPETENCY/SKILL: Manages a weed-control program to reduce losses and maximize yield.

16.5 TASK: Operates mechanical weed control equipment, herbicide application equipment, and power sources safely.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

16.0 **COMPETENCY/SKILL:** Manages a weed-control program to reduce losses and maximize yield.

16.6 **TASK:** Performs field adjustments and minor field repairs on weed-control equipment and power sources.

PERFORMANCE OBJECTIVE:

See Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

16.0 **COMPETENCY/SKILL:** Manages a weed-control program to reduce losses and maximize yield.

16.7 **TASK:** Reads and complies with manufacturer's label directions and legal requirements affecting recommended herbicide application, timing, and safety.

PERFORMANCE OBJECTIVE:

See Task 14.6, Competencies 4.0, 8.0, and Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

16.0 **COMPETENCY/SKILL:** Manages a weed-control program to reduce losses and maximize yield.

16.8 **TASK:** Stores, mixes, and handles herbicides conforming to manufacturer's label directions.

PERFORMANCE OBJECTIVE:

See Task 14.6, and Competencies 4.0, 8.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

16.0 **COMPETENCY/SKILL:** Manages a weed-control program to reduce losses and maximize yield.

16.9 **TASK:** Meets state requirements for herbicide use.

PERFORMANCE OBJECTIVE:

See Tasks 14.6, and Competencies 4.0, 8.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

16.0 **COMPETENCY/SKILL:** Manages a weed-control program to reduce losses and maximize yield.

16.10 **TASK:** Recognizes dangers of carryover of herbicide residues in the soil and in application equipment.

PERFORMANCE OBJECTIVE:

See Task 14.5, and Competency 8.0 and Agriculture Power and Machinery Tasks 1.6, 2.5, and Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

16.0 **COMPETENCY/SKILL:** Manages a weed-control program to reduce losses and maximize yield.

16.11 **TASK:** Appraises the performance of recommended herbicides.

PERFORMANCE OBJECTIVE:

 See Task 16.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

17.0 COMPETENCY/SKILL: Selects and applies fertilizers to maximize return.

17.1 TASK: Applies fertilizer.

PERFORMANCE OBJECTIVE:

See Task 17.2, and Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

17.0 **COMPETENCY/SKILL:** Selects and applies fertilizers to maximize return.

17.2 **TASK:** Plans a fertility program using combinations of nutrient sources to be applied at designated times in specific amounts.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a fallow field that is designated to be planted,

EVALUATION: plan a fertility program for a designated crop.

STANDARD: The effective fertility program should be an economical approach with consideration given to the following:

1. Higher yields.
2. Early maturity and improved quality.
3. Reduces the risk of crop failure.
4. Well nourished crops are better able to resist disease, insect, and weed infestations.
5. High level of nutrients help to ensure that most crops will be less sensitive to stresses.
6. Fertilizer cost.
7. Equipment cost.
8. Labor cost.
9. Formulation and analysis of the fertilizer.
10. Time of application.
11. Fertilizer placement.
12. Match equipment to the job.

STUDENT LEARNING EXPERIENCES:

1. Take and prepare soil sample for testing and interpret results (pH, available nutrients, type).
2. Compare and calculate the cost of fertilizer (application methods, cost per unit per nutrients, return for investment).
3. Determine and discuss the crop's nutrient requirements.
4. Identify and discuss the various methods of fertilizer application.
5. Compare and discuss yield results from using different sources of nutrients and soil amendments.
6. Identify and discuss deficiency symptoms.
7. Collect leaf sample for analysis and discuss results.
8. Demonstrate the safe and proper application of fertilizer utilizing designated spray machinery.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Set up fertility program experiment in land laboratory, and collect data for analysis.
2. Following a demonstration, operate designated spray machinery.
3. Following a demonstration, calibrate spray machinery.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, fertilizer application equipment, and operator's manual.

RESOURCES:

FUNDAMENTALS OF MACHINE OPERATION: CROP CHEMICALS. Deere and Company, Moline, IL. 2ND ED. 1982.

17.0 **COMPETENCY/SKILL:** Selects and applies fertilizers to maximize return.

17.3 **TASK:** Determines the crop's nutrient requirements.

PERFORMANCE OBJECTIVE:

See Tasks 14.5 and 17.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

17.0 **COMPETENCY/SKILL:** Selects and applies fertilizers to maximize return.

17.4 **TASK:** Compares yield results from using different sources of nutrients and soil amendments.

PERFORMANCE OBJECTIVE:

See Tasks 14.5, 17.2 and Competency 10.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

17.0 **COMPETENCY/SKILL:** Selects and applies fertilizers to maximize return.

17.5 **TASK:** Recognizes deficiency symptoms.

PERFORMANCE OBJECTIVE:

See Tasks 14.5, 17.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

17.0 **COMPETENCY/SKILL:** Selects and applies fertilizers to maximize return.

17.6 **TASK:** Takes and prepares soil sample for testing and interprets results (pH, available nutrients, type).

PERFORMANCE OBJECTIVE:

See Tasks 14.5, 17.2 and Competency 10.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

17.0 **COMPETENCY/SKILL:** Selects and applies fertilizers to maximize return.

17.7 **TASK:** Collects leaf sample for analysis.

PERFORMANCE OBJECTIVE:

See Task 17.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

17.0 **COMPETENCY/SKILL:** Selects and applies fertilizers to maximize return.

17.8 **TASK:** Recognizes the various methods of fertilizer application.

PERFORMANCE OBJECTIVE:

See Task 17.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

17.0 **COMPETENCY/SKILL:** Selects and applies fertilizers to maximize return.

17.9 **TASK:** Determines the rate of fertilization per application to receive maximum return per (fertilizer) unit applied (lbs. applied per acre).

PERFORMANCE OBJECTIVE:

See Tasks 14.5, 17.2, and Competency 11.0, and Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

17.0 **COMPETENCY/SKILL:** Selects and applies fertilizers to maximize return.

17.10 **TASK:** Performs field adjustments and minor field repairs on fertilizer equipment.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

17.0 **COMPETENCY/SKILL:** Selects and applies fertilizers to maximize return.

17.11 **TASK:** Operates and calibrates fertilizer application equipment.

PERFORMANCE OBJECTIVE:

See Agricultural Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

17.0 **COMPETENCY/SKILL:** Selects and applies fertilizers to maximize return.

17.12 **TASK:** Compares and calculates the cost of fertilizer (application methods, cost per unit per nutrients, return for investment).

PERFORMANCE OBJECTIVE:

See Task 17.2

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

18.0 **COMPETENCY/SKILL:** Harvests crops to ensure maximum yield.

18.1 **TASK:** Determines best method and time of harvest.

PERFORMANCE OBJECTIVE:

See Task 18.3

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

18.0 **COMPETENCY/SKILL:** Harvests crops to ensure maximum yield.

18.2 **TASK:** Measures harvesting losses and determines the necessary machine adjustments.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Tasks 7.8 and 31.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

18.0 **COMPETENCY/SKILL:** Harvests crops to ensure maximum yield.

18.3 **TASK:** Determines whether it is more economical to own harvesting equipment or to hire a custom operator.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a hypothetical situation of being a farm machinery and equipment manager,

EVALUATION: plan and organize an effective machinery and power equipment program in terms of expected costs and returns.

STANDARD: The effective machinery and equipment program should have consideration given to the following:

1. Purchase, rent, or lease.
2. Compare leasing costs to ownership costs by the cost-analysis method.
3. Costs comparison includes:
 - a. Fixed costs.
 - b. Repair costs.
 - c. Fuel, lubricant and labor costs.

STUDENT LEARNING EXPERIENCES:

1. Identify and discuss depreciation, taxes, shelter, interest, and insurance, and their application to fixed costs.
2. Discuss repair costs and the relationship to the useful life of the machinery.
3. Discuss how fuel, lubricant, and labor cost are averaged for annual consumption.
4. Discuss the current farm tax regulations and shelters that affect annual deductions.
5. Discuss the advantages and disadvantages of leasing or purchasing farm machinery and equipment.
6. Discuss fixed costs, variable costs, and capital investment.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a farm machinery and equipment sales representative to address the class on the purchase or lease options available to the farmer.
2. Invite a Production Credit Association/Federal Land Bank Representative to address the class on financing methods and procedures.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, FMO: Machinery Management, and calculators.

RESOURCES:

FUNDAMENTALS OF MACHINE OPERATION: MACHINERY MANAGEMENT. Deere and Company, Moline, IL. 2ND ED. 1981.

18.0 **COMPETENCY/SKILL:** Harvests crops to ensure maximum yield.

18.4 **TASK:** Uses machinery efficiently to minimize harvest time.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competencies 7.0 and 31.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

18.0 **COMPETENCY/SKILL:** Harvests crops to ensure maximum yield.

18.5 **TASK:** Identifies safety hazards present in harvesting and transporting crops.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Task 2.1 and Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

18.0 **COMPETENCY/SKILL:** Harvests crops to ensure maximum yield.

18.6 **TASK:** Operates harvest equipment at correct field travel and PTO speed.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

18.0 **COMPETENCY/SKILL:** Harvests crops to ensure maximum yield.

18.7 **TASK:** Performs field adjustments and minor field repairs on harvest equipment.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competencies 7.0, 23.0, and 31.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

18.0 **COMPETENCY/SKILL:** Harvests crops to ensure maximum yield.

18.8 **TASK:** Identifies weather and soil conditions essential for maximum harvest efficiency and minimum crop injury.

PERFORMANCE OBJECTIVE:

See Task 18.3

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

18.0 **COMPETENCY/SKILL:** Harvests crops to ensure maximum yield.

18.9 **TASK:** Evaluates washing, grading, packing, and storage facilities
 in relation to cost and returns.

PERFORMANCE OBJECTIVE:

 See Agriculture Power and Machinery Tasks 1.6 and 2.5

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

18.0 **COMPETENCY/SKILL:** Harvests crops to ensure maximum yield.

18.10 **TASK:** Selects and applies defoliants.

PERFORMANCE OBJECTIVE:

See Task 14.6, Competencies 4.0, 8.0, and Agriculture Power and Machinery Competency 7.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

19.0 COMPETENCY/SKILL: Operates and maintains engines, implements,
and equipment for efficient operation.

19.1 TASK: Repairs and services air and exhaust systems.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 13.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

19.0 **COMPETENCY/SKILL:** Operates and maintains engines, implements,
and equipment for efficient operation.

19.2 **TASK:** Repairs and services fuel systems.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 8.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

19.0 **COMPETENCY/SKILL:** Operates and maintains engines, implements, and equipment for efficient operation.

19.3 **TASK:** Diagnoses, replaces, and/or services electrical systems.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 16.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

19.0 **COMPETENCY/SKILL:** Operates and maintains engines, implements,
and equipment for efficient operation.

19.4 **TASK:** Has a basic understanding of the operation of hydraulic
systems.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 22.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

19.0 **COMPETENCY/SKILL:** Operates and maintains engines, implements,
and equipment for efficient operation.

19.5 **TASK:** Adjusts and replaces clutch components.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 17.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

19.0 **COMPETENCY/SKILL:** Operates and maintains engines, implements,
and equipment for efficient operation.

19.6 **TASK:** Repairs components of the PTO.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 21.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

19.0 **COMPETENCY/SKILL:** Operates and maintains engines, implements, and equipment for efficient operation.

19.7 **TASK:** Services and repairs components of the final drive, differential, and transmission.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competencies 18.0, 19.0, 20.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

19.0 **COMPETENCY/SKILL:** Operates and maintains engines, implements,
and equipment for efficient operation.

19.8 **TASK:** Services and repairs brake system components.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 11.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

19.0 **COMPETENCY/SKILL:** Operates and maintains engines, implements, and equipment for efficient operation.

19.9 **TASK:** Properly stores equipment not in use.

PERFORMANCE OBJECTIVE:

CONDITIONS: Given a tractor, mechanic's tool set, and operator's manual,

EVALUATION: properly store designated equipment.

STANDARD: The tractor will be prepared and stored in accordance with manufacturer's specifications.

STUDENT LEARNING EXPERIENCES:

1. Discuss the economics of good agricultural power and machinery management practices.
2. Discuss the manufacturer's suggested storage procedures.
3. Demonstrate the proper storage procedures on designated equipment.
4. Discuss the manufacturer's suggested procedures for removing machinery from storage.

SUGGESTED INSTRUCTIONAL TECHNIQUES:

1. Invite a representative from a local agricultural equipment dealership to discuss proper agricultural machinery maintenance and management.
2. Show a movie about proper preventive maintenance of agricultural machinery and equipment.
3. Visit a local farm operation to discuss and observe the farm operator's equipment management procedures.

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

1. Textbooks, trade/industry journals, operator's manual.
2. Mechanic's tool set, necessary machinery and equipment, movie projector and movie.

RESOURCES:

FUNDAMENTALS OF MACHINE OPERATION: PREVENTIVE MAINTENANCE. Deere and Company, Moline, IL. 2ND ED. 1981.

19.0 **COMPETENCY/SKILL:** Operates and maintains engines, implements,
and equipment for efficient operation.

19.10 **TASK:** Performs proper maintenance and servicing of machinery
according to operator's manual.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competencies 2.0 and 3.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

19.0 **COMPETENCY/SKILL:** Operates and maintains engines, implements, and equipment for efficient operation.

19.11 **TASK:** Inspects equipment for potential breakdowns and safety hazards.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competencies 2.0 and 3.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

19.0 **COMPETENCY/SKILL:** Operates and maintains engines, implements,
and equipment for efficient operation.

19.12 **TASK:** Maintains and services tires on machines as specified in the
operator's manual.

PERFORMANCE OBJECTIVE:

See Agriculture Power and Machinery Competency 15.0

CONDITIONS:

EVALUATION:

STANDARD:

STUDENT LEARNING EXPERIENCES:

SUGGESTED INSTRUCTIONAL TECHNIQUES:

INSTRUCTIONAL EQUIPMENT, MATERIALS, AND SUPPLIES:

RESOURCES:

ANNOTATED BIBLIOGRAPHY

AGRICULTURAL BUSINESS INSTRUCTIONAL RESOURCE GUIDE. Vocational and Adult Education, Department of Education, Commonwealth of Virginia, Richmond, VA. 1983.

A competency based guide with a direct emphasis on agribusiness. Emphasis is placed on plant and animal sciences with the incorporation of business principles. A very good guide for an instructor looking for an agribusiness orientation; however, the animal and plant science is general and where it becomes specific it is oriented toward the east coast.

Allen, J. and B. P. Lientz. EFFECTIVE BUSINESS COMMUNICATION - A PRACTICAL GUIDE. Goodyear Publishing Co., Santa Monica, CA. 1979.

This text covers most aspects of communication in a business environment: speeches, meetings, the writing of reports, letters, and memos, even resume writing and interviewing, are addressed in a well-indexed reference.

Anastasi, T. FACE TO FACE COMMUNICATION. General Electric Training Division, Schenectady, N.Y. 1975.

Useful for its section on active listening in a business atmosphere, a topic which many references do not specifically address.

Ashmore, M. Catherine and Sandra G. Pritz. P.A.C.E. (PROGRAM FOR ACQUIRING COMPETENCE IN ENTREPRENEURSHIP). The National Center for Research in Vocational Education, The Ohio State University, Columbus, OH. 1982.

A self-paced manual of multiple sections designed to introduce the basic principles of starting and running a business. It is intended for a small business oriented class. It is not specifically designed for agribusiness, but is suitable to use.

Bohmont, Bert L. THE NEW PESTICIDE USER'S GUIDE. Reston Publishing Co., Reston, VA. 1983.

This book has exceptional utility in the area of fungicides, herbicides, insecticides and plant disease control. It is easy to read, well organized and has plenty of good line drawings to make a point. It is best in the area where it is needed; mixing and diluting of pesticides, pesticide safety, pesticide applications. If money was available for only one book to cover a variety of subjects, it would be well spent on this book. It is truly a guide or "how to" book without peer.

Branson, Robert E. and Douglass G. Norvell. INTRODUCTION TO AGRICULTURAL MARKETING. McGraw Hill Book Co., Novato, CA. 1983.

Twenty-two chapters divided into four parts, including: Agricultural Marketing, Agribusiness Marketing and Dynamics of Marketing Systems. A comprehensive view and study of marketing concepts (including a review of supply and demand concepts); marketing functions and objectives of marketing; the role of government; alternate marketing strategies for producers, and marketing management. This text provides the reader with an excellent introduction to all areas of "agrimarketing" - the marketing of agricultural commodities, foods, fibers and agricultural supply inputs. This text also includes a glossary of agrimarketing terms.

Chapman, Stephen R. and Lark P. Carter. CROP PRODUCTION: PRINCIPLES AND PRACTICES. W. H. Freeman Co., San Francisco, CA. 1976.

This book is organized in two ways. The first, principles, practices and milieu, is helpful to the uninitiated. The second, manner of organization, is traditional for crop production books, by commodity. Either the experienced reader or the novice will have no trouble using this book and obtaining the information being sought. The uninitiated may even learn more because of this organization.

Chicago Board of Trade. THE MARKETPLACE. Lloyd Besant and Nancy Keefer, Editors. 1983.

This book addresses the fundamentals of economics and marketing, in particular, how they affect our everyday decisions. The book is divided into five chapters: Markets Supply and Demand, Marketing of Agricultural Commodities, Add-on Costs, Money, The Price of Money and Financial Investments, and Development of Futures Markets. Such topics as; how prices are created, where to get Market information, the role of government, the regulation and inspection of commodities, the difference between cash and function of commodity futures exchanges, are discussed. Finally, a glossary of marketing terms is included.

Cole, H. H. and Magnar Ronning. ANIMAL AGRICULTURE: THE BIOLOGY OF DOMESTIC ANIMALS AND THEIR USE BY MAN. W. H. Freeman Publishing Co., New York, N.Y. 2ND ED. 1980.

An excellent general animal science textbook. Approaches all major species in a balanced manner. Covers types, breeds of all major species; heritability factors and influences; physiology; nutrition; management and marketing of animals.

Cullison, Arthur E. FEEDS AND FEEDING. Reston Publishing Co., Reston, VA. 1979.

An excellent and well written textbook. Clear and informative descriptions of some esoteric concepts. Presentation is in the form of small chapters, almost intended to be separate lectures. All aspects of feeds and feeding are covered in enough detail to be both a beginning and end point of information.

Devino, Gary T. AGRIBUSINESS FINANCE. Interstate Printers and Publishers, Danville, IL. 1981.

An excellent introductory agribusiness finance text for high school students. It lays out the essentials in a clear, easy-to-understand form. Considering that it is an introductory text, however, it is remarkable that it presupposes an understanding of the balance sheet and the income statement. It is recommended that instructors introduce the latter two topics before beginning to use this book in class.

Ensminger, M.E. THE STOCKMAN'S HANDBOOK. Interstate Printers and Publishers, Inc., Danville, IL. 6TH ED. 1983.

This book brings together, correlates, and applies the art and science of livestock production, marketing, and processing all classes of domestic livestock--beef cattle, dairy cattle, sheep, swine, and horses. The material is helpful, clear, concise, accurate and easily read.

Follet, R. H., L. S. Murphy and Roy L. Donahue. FERTILIZERS AND SOIL AMENDMENTS. Prentice Hall Inc., Englewood Cliffs, N.J. 1981.

An excellent book for a general coverage of fertilizers and soil amendments. Easy to read for students, highly informational for the professional. Well organized chapters. Never disappoints when it is visited.

Forbes, R. CORPORATE STRESS: HOW TO MANAGE STRESS ON THE JOB AND MAKE IT WORK FOR YOU. Doubleday and Co., Garden City, NY. 1979.

This book identifies sources of stress and ways of coping with them with a special emphasis on organizational stress. The book contains several self-evaluation exams to help identify the readers stress-personality type, stress tolerance level and the stress level of their current job. A good, non-technical guide to stress management.

Fournies, F. F. COACHING FOR IMPROVED WORK PERFORMANCE. Van Nostrand Reinhold Co., New York, N.Y. 1978.

The author gives the impression that he has used the techniques expounded in this book, and that they work. He explains a simple technique which is based upon getting the employee to recognize that a problem exists in their performance, something many managers are unable to do in an effective manner. This is a valuable reference for anyone who has subordinates answering to them.

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FUNDAMENTALS OF MACHINE OPERATION: CROP CHEMICALS. Deere and Company, Moline, IL. 2ND ED. 1982.

The operator's manual is designed as a crop chemical guide. These materials provide basic information in crop chemicals for use by equipment operators as well as teachers and the student. Emphasis is on theory of operation, diagnosis and repair.

FUNDAMENTALS OF MACHINE OPERATION: MACHINERY MANAGEMENT. Deere and Company, Moline, IL. 2ND ED. 1981.

The operator's manual is designed as a machinery management guide. These materials provide basic information in machinery management for use by equipment operators as well as teachers and the student. Emphasis is on theory of operation, diagnosis and repair.

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The operator's manual is designed as a preventive maintenance guide. These materials provide basic information in power mechanics for use by equipment operators as well as teachers and the student. Emphasis is on theory of operation, diagnosis and repair.

"How to Read a Financial Report". Merrill, Lynch, Pierce, Fenner and Smith, Inc. 5th ED. 1984.

This free publication, available through Merrill-Lynch, is useful in teaching the uninitiated how to read annual reports. It offers good support material for reading balance sheets and income statements. In that regard, it is a useful adjunct to Devinos' AGRIBUSINESS FINANCE text.

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James, S. C. FARM ACCOUNTING AND BUSINESS ANALYSIS. Iowa State University Press, Ames, IA. 2ND ED. 1979. pp. 3-13.

Kohls, R. L. and J. N. Uhl. MARKETING OF AGRICULTURAL PRODUCTS. Macmillan Publishers, New York, N.Y. 5TH ED. 1980.

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A memory building book which emphasizes imagery and picture building techniques. Jerry Lucas, one of the co-authors, is a former college and professional basketball player who while pursuing college basketball was able to achieve academic success using the memory techniques contained in this book. The anecdotal background and memory exercises in the text are both helpful and interesting.

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Minish, Gary L. and Danny G. Fox. BEEF PRODUCTION AND MANAGEMENT. Reston Publishing Co., Reston, VA. 1979.

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A grooming and behavior guide for business-people of all types. It goes beyond the simple "how-to" dress, into insights on why business-people dress the way they do and how they use appearance to help them advance their careers.

ORGANIZATION OF AGRICULTURAL BUSINESSES', UNITS 2 AND 3. Agricultural Education Section, Department of Vocational Education, Phoenix, AZ. and Department of Agricultural Education, The University of Arizona, Tucson, AZ. pp. 7-12, HO 1a-d. 1971.

Peake, J. PUBLIC RELATIONS IN BUSINESS. Harper and Row Publishers, New York, N.Y. 1980.

An introductory text to public relations. It offers professional people material they can use to manage their businesses with fewer problems and more profit. Sections on writing press releases, working with the media, and constructing an employee newsletter are only a few of the topics covered in the text. Although the writing of advertising copy is not directly addressed in the text, the techniques for writing public relations material apply to the preparation of many ads, i.e. avoiding the passive voice, and/or being able to state your message in a brief, succinct manner. This reference is suitable for both teachers and students.

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The resource unit is designed as a core curriculum guide. These materials provide basic information in construction and maintenance for use by teachers and the student. Emphasis is on theory and practical shop experience with tools, equipment, communications and safety.

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This book does not specifically address agribusinesses, however it does contain a concise, readable portion on evaluating business plans.

Roy, E. P., F. L. Corty and G. D. Sullivan. ECONOMICS--APPLICATIONS TO AGRIBUSINESS AND AGRICULTURE. Interstate Printers and Publishers, Danville, IL. 1981.

A good general text for agribusiness. It provides a broad overview of macro-economic issues in American agriculture and agribusiness. Nonetheless, it should be supplemented in the area of finance. Because of its length and the depth in which it treats certain economic issues, some teachers may prefer to make it available to students as a reference rather than using it as a textbook.

Saks, M. THE CALCULATOR COOKBOOK. Prentice-Hall, Englewood Cliffs, N. J. 1983.

A "how to" book for the use of all types of calculators. It begins with the most simple arithmetic calculators and works towards the use of scientific, statistical and business calculators. Most of the advanced examples in the text use Texas Instrument calculators as a basis. (The programming of sophisticated scientific calculators is beyond the scope of this work.)

Schwartz, D. J. THE MAGIC OF THINKING BIG. Simon and Schuster, New York, N.Y. 1965.

A classic, practical, down-to-earth guide to positive thinking and confidence building. Though easily read, its rah-rah approach may be a turn off for today's cynical teens. The instructor may wish to "translate" some of the ideas contained in the book into a more acceptable form for his/her audience.

Seymour-Smith, L. DELEGATING EFFECTIVELY: A MANAGER'S GUIDE. Management Update Press, London, ENG. 1985.

A short (70 page), concise work on the delegation of authority in business. It defines terms such as power, authority, accountability, responsibility and span of control in reference to the delegation process. A good reference for students and teachers alike.

STUDENT REFERENCE ON INSECTS FOR CORE CURRICULUM, UNIT 7. Department of Agricultural Education, The University of Arizona, Tucson, AZ. 1980.

The student reference is designed as a complement to the TWO YEAR CORE CURRICULUM FOR AGRICULTURAL EDUCATION IN ARIZONA. These materials provide basic information in insect control management for use by teachers and the student. Emphasis is on theory and practical application to supplement textbooks and other materials.

STUDENT REFERENCE ON PLANT DISEASES FOR CORE CURRICULUM, UNIT 6. Department of Agricultural Education, The University of Arizona, Tucson, AZ. 1977.

The student reference is designed as a complement to the TWO YEAR CORE CURRICULUM FOR AGRICULTURAL EDUCATION IN ARIZONA. These materials provide basic information in plant disease management for use by teachers and the student. Emphasis is on theory and practical application to supplement textbooks and other materials.

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The student reference is designed as a complement to the TWO YEAR CORE CURRICULUM FOR AGRICULTURAL EDUCATION IN ARIZONA. These materials provide basic information in weed control management for use by teachers and the student. Emphasis is on theory and practical application to supplement textbooks and other materials.

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Wolf, B., J. Fleming and J. Batchelor. FLUID FERTILIZER MANUAL, VOLUMES I AND II. National Fertilizer Solutions Association, Peoria, IL. 1985.

These books are expensive, \$100.00, but they are worth their weight in organization and information. They have a "how to" approach towards soils, irrigation and fertilizers. The totally uninitiated would be able to pick up these books, look up a topic and feel competent about performing the task described. It is well written, extremely well organized, and the tab format makes gathering information at a moments notice easy. Easy to lecture from because of the print and format.